GAS JOURNAL, DEC. 28, 1938

VOL. 224. 90th YEAR. No. 3945.

1938

THOUGH one great cause for thankfulness stands out from the shadows, it is impossible to avoid the conclusion that the passing of 1938 is likely to be regretted by very few people indeed. It has been a period of difficulty, uncertainty, and apprehension—of recurrent disturbances, sudden severe shocks, and alarming upheavals—with all the troubles that such unsettling conditions must produce under the complicated economic structure of to-day. Influenced as it has been, more or less throughout its course, by unpropitious factors like these, it would not have been reasonable to expect from 1938 an abundance of good things, but rather what a well-known company chairman lately informed his shareholders has occurred—that, so far from there having been any improvement during the year, some deterioration of political, economic, and financial conditions was to be noted.

In spite of the industrial activity which the international situation has at long last called forth—a large proportion of which, it has to be remembered, calls for skilled work—Ministry of Labour statistics show that, computed on the customary basis, there were unemployed, at the middle of November, 1,828,103 persons, or 46,876 more than a month earlier, and 328,000 more than a year ago. As compared with the preceding month, "seasonal decline" provides a part-explanation, but a year ago, of course, the same influence operated. This increase in the unemployed as compared with November, 1937, is widely spread over different industries—building, cotton, and coal mining heading the list, in this order. Comparing the figures for the months of October and November, 1938, in the various administrative divisions, it is seen that the only division showing an improvement is the Midlands, where, indeed, improvement was maintained for the third successive month. It can hardly be hoped that such general conditions will prove to have been entirely without influence on the Gas Industry, but we see no reason to doubt that anything which has been lost in one direction may have been recovered, or more than recovered, in another.

And it has to be remembered that, in spite of all the unfavourable points that may be urged with regard to 1938, there nevertheless remains the great cause for thankfulness to which we have already referred. Though there have been startling flutterings, caused by outbursts and squalls, the wings of the Angel of Peace are still spread over our beloved country, and when we look at events in the world round about us during the past twelve months, some realization of all that this means must be borne in upon us. Uneasy though this peace may be, let our thankfulness for it hearten us to put up a successful struggle against all the difficulties that lie ahead. Unhappily, in a world in which "might" is so apt to be translated into "right," maintenance of peace can be assured only by the fullest possible preparation for war—a lesson which this country was late indeed in learning, but, it is to be hoped, not too late. The great British Empire must be made powerful enough to be able to quote to the whole world the famous motto of the Order of the Thistle, and to ensure that peace within its confines which is so steadfastly desired by its people. We must be so strong that there will never be another "September crisis" like that of 1938—or, if there be such a crisis again, so strong that we can face the issue without a doubt regarding the outcome.

Until that position is reached, and while world politics retain their present volcanic attributes, the greatest enemy to progress is likely to be uncertainty. The people of the Empire will do all that is required of them, when they know just what may be required; and they will face-up to any necessary situation, when they know just what is necessary. Only let them be told exactly what to do, and precisely where they stand, and the future can be regarded with confidence. It is for this reason that we applaud statements, official and otherwise, that are marked by directness rather than by adroitness.

Changing Conditions

Twelve months ago, when reviewing the events of 1937, we remarked that "nowadays changes are as rapid, and as momentous, as they are hard to foresee; and a feeling of uncertainty, tinged with some fear of the unknown, acts as a restraining influence. Spain remains in the throes of civil strife, with all its dangers to other countries; while now in the Far East there has arisen a desperate struggle, fraught with even greater risk of extended conflagration. In other parts, more or less frequent 'incidents' have been reported, and following in their wake come 'scares' which often have power to alarm until dispersed." All this applies to-day, but

mostly with even greater force than a year ago, and with the addition of further, and more devastating, "incidents."

In domestic affairs changes have occurred also. The Railways—to quote one writer—have asked the Government to "remove the fetters which have shackled them for more than one hundred years," so that they may operate as a profitable business, and meet competition on level terms. Hitherto the Railways have been under statutory obligation to take all business offered, profitable or otherwise, while no similar duty has been cast upon Road Transport This request is a change for the Railways, after their long and meritorious career, but the plea for the removal of the "fetters which have shackled them" has a familiar ring to the Gas Industry, which is materially interested in the welfare of the Railways by reason of the enormous quantities of coal, as well as of solid and liquid products, that have to be carried.

In another direction an anticipated change also affecting the Gas Industry and the Railways seems somewhat to have "missed fire." The "Holidays with Pay" movement has been making steady progress, and earlier in the year it was anticipated that travel facilities and hotel and boarding house accommodation might be strained almost to breaking point, so that a demand arose for "staggered" holidays. Alas! holidays with pay for small wage earners having large families in only too many cases cannot be stretched to cover a seaside holiday. Thus the movement has not proved the source of revenue to the Railways and the holiday resorts that was expected. Presumably, therefore, seaside gas undertakings have not found their resources overtaxed, and those operating in industrial areas have not suffered such loss of consumption as might have been anticipated.

Confidence Must be Restored

The year that is passing has been marked by an uncertainty which unhappily has shown no signs of diminishing—but rather the reverse—as time has gone on. The Stock Markets, which are a sure indication, over a period, of the state of public confidence, have sunk from depression to still deeper depression, and business in other directions has suffered likewise. It is, of course, obvious that "safety means sacrifice"; restoration of public confidence will be achieved when the country as a whole is in a position to feel equally assured that "sacrifice means safety."

Though the "voluntary" principle may be applied to the National Register, at any rate until a state of emergency—when it is to be hoped the country will be allowed time to change-over—it is hardly likely that there will be anything "voluntary" about meeting the financial requirements of the situation. These requirements cannot fail to affect everybody in some degree, but the cost would not be grudged so long as it was realized that the money was being laid-out to best advantage, having in mind the unsettled state of world affairs, and that unessential expenditure in other directions was being kept within the narrowest practicable limits for the time being. While, however, no one could desire the exercise of risky economy in connexion with vital measures, there must be grave doubts as to the wisdom of the widespread increases this year which are reported in Local Government expenditure accompanying a war-level income tax and colossal commitments upon rearmament.

So far as our own particular Industry is concerned, there is not the slightest cause for misgiving. As already remarked, we see no reason to doubt that the satisfactory results achieved in 1937, as recorded in the "JOURNAL" a few weeks ago, are an indication of what may be anticipated when the official figures for the current year become available, and with a clearer outlook the future would be faced with that sturdy optimism so characteristic of the personnel of the Industry. Pending the restoration of that confidence which the events of the past twelve months have so rudely disturbed, the Gas Industry remains vigorous and alert, knowing full well that, whatever the outcome of the existing world turmoil, its services will be equally necessary to the life of the country.

Meanwhile, let us voice our thankfulness that the worst dangers of 1938 have been successfully avoided, and extend to readers the greatest wish of all—that they enjoy "A Peaceful New Year."

Work of the National Gas Council

From the point of view of the National Gas Council the year now drawing to a close has been no exception to its predecessors in that it has witnessed a further extension of the volume and importance of the work which the Council is called upon to undertake. Legislation affecting the Gas Industry in many ways, and in some cases vitally, has been considerable, and has necessitated both constant vigilance and organized effort in order to secure that in its operation it shall as far as possible be in consonance with the interests of the Industry. The complexity of commercial and industrial relations generally shows no signs of diminishing, and collaboration with other bodies in matters of common interest has had to be intensified.

The Council's work in other directions also tends to become more complicated, making further demands upon the time of members, and it is to be hoped that one of the results flowing from the New Constitution will be to reduce the volume of Committee work, and eliminate overlapping. The actual modifications of the Constitution are still under consideration, but there is a consensus of opinion that simplification of the organization of the national bodies is desirable.

In addition to the ordinary work of the Council, negotiations with the authorities in regard to the special position of gas supply in common with other public utility services, of which the uninterrupted functioning during war-time is regarded as essential, have been continued during the year. The position adopted by the Government is that work necessary for the protection of staff and employees, such as the provision of shelters and the like, must, as in other cases, be carried out at the expense of individual undertakings, but that undertakings in prescribed areas which carry out extra works designed to ensure continuance of supply, despite damage to plant by hostile aircraft, should receive a grant of 50% of the cost.

The Council do not consider the proposed grant as adequate in amount, and pressure is being put on the authorities concerned with a view to obtaining more generous treatment. Gas undertakers are anxious to meet the views of the Government in all respects, but the precautionary works they are called upon to carry out in the public interest will in most cases be entirely unremunerative, and it seems only fair that the additional burden placed upon them should be made as light as possible.

Coal

Of the legislation passed during the year by far the most important measure from the point of view of the Gas Industry is the Coal Mines Act, 1938, which has extended for another five years the operation of Part I. of the Act of 1930. Ever since the extension was mooted, the Council, acting in

conjunction with the Conjoint Conference of Public Utility Associations, has used every endeavour to have Part I., under which the quota system was set up, amended. Repeated representations were made to the Government and to the coalowners that the policy of bolstering up uneconomic and inefficient pits was not only unfair to coal consumers, but was an unsound method of seeking to bring prosperity to the coal industry. Representations as to the effects of the system upon both industrial and domestic consumers, and as to the inadequacy of the protection afforded to them, were also made to many Members of Parliament, and opposition to an extension of more than a year was organized.

As a result of these sustained efforts certain guarantees were given to the President of the Board of Trade by the Central Coal Council under which some further measure of protection is afforded to consumers, and in addition certain of the recommendations in regard to the strengthening of the Committees of Investigation were incorporated in the Bill, which also provided for the creation of an Appeal Tribunal.

Since the Measure reached the Statute Book the energies of the Council have been directed towards ensuring that the representatives of coal consuming interests on the Committees of Investigation shall be as effective as the limits of their jurisdiction will permit. Up to the present the efficacy of the reformed Committees and of the Appeal Tribunal as safeguards for consumers has not yet been fully tested, but arrangements are being made whereby suitable cases will be submitted to them.

A direct result of the criticism levelled against Part I. of the Coal Mines Act, and of the demand for further enquiry, was the setting up of a Departmental Committee "to enquire into the organization and methods of distribution of coal, coke, and manufactured fuel; to investigate the various items which make up the differences between the prices received by the producers and those paid by the consumers, and to make recommendations."

So far as the distribution of coal is concerned, the Council decided that they were not in a position to offer any useful evidence. In regard to coke, however, evidence has been invited by the Mines Department and will, if occasion arises, be given by four representative undertakings.

Other Legislation

Another Act of 1938 which, though of less universal effect upon the Industry than the Coal Mines Act, has none the less an important bearing upon a branch of the business of a large number of gas undertakings, is the Hire Purchase Act. An effort was made to secure the complete exemption of public utility undertakings from the operation of the Act, but the amendment giving effect to the proposal was rejected by the Committee which considered the Bill. On the other hand, certain safeguards were obtained, and the Act is not expected to prove prejudicial to gas undertakings. The changes in the law relating to hire purchase necessitated substantial alteration in the form of hire purchase agreements hitherto used by undertakers, and in response to a large number of requests for a standard form the Council obtained from eminent Counsel a form which has been circulated to members.

The Finance Act, and other Acts which in a greater or less degree affect the interests of gas undertakers, were all the subject of discussion and negotiation while in their earlier stages, and the same applies to new regulations and orders issued during the year under the provisions of earlier Acts.

In the realm of Private Bill legislation a measure of great importance to the Industry as a whole was the West Yorkshire Gas Distribution Act. The objects of the Bill were to obtain powers to buy and sell gas, lay mains, and erect holders in West Yorkshire, and the County Council of both the East and West Ridings sought to obtain the insertion for their protection of a very onerous clause relating to highways. The clause was strenuously opposed by the promoters, and after a long hearing in Committee it was disallowed and another clause was substituted for it. The latter embodies the principle for which the Council along with the Conjoint Conference has consistently contended—namely, that the Highway Authority shall make good to the undertaker the expense reasonably incurred by him in effecting any alteration in the position of mains, pipes, and works rendered reasonably necessary by highway or bridge improvements.

This further precedent, in addition to others on the same lines previously secured, is of particular importance at the present time when the whole question of mains and cables in highways is shortly to be reviewed by a Joint Select Committee of both Houses of Parliament. Since the passage of the Trunk Roads Act under which the Minister of Transport has become the highway authority in respect of certain of the principal roads of the country, the Ministry has acquired a direct interest in the settlement of this question, which for years has been the subject of negotiation between public utility undertakers and highway authorities. The terms of reference of the Committee have been announced, and the Conjoint Conference is actively engaged in preparing the case for the public utilities.

Rating and Valuation

Various rating and valuation questions have arisen or been pursued during the year. Into the latter category fall the discussions which have been going on for some time in regard to the assessment of public utility hereditaments for rating purposes.

In a memorandum submitted to the Central Valuation Committee, the Conjoint Conference expressed the view that the present jurisdiction of Courts of Quarter Sessions as Appeal Tribunals from Assessment Committees constitutes a serious anomaly in the case of a large public utility whose sub-surface works extend into several rating areas, and proposed that appeals should lie to a national tribunal such as the Railway and Canal Commission. The memorandum also proposed that either the rating authority or the ratepayer should be enabled to insist on assessment by an Arbitrator instead of by an Assessment Committee.

Following the presentation of this memorandum the Council of the Chartered Surveyors' Institution and the Committee of the Rating Surveyors' Association submitted another memorandum in which, while they urged that the jurisdiction of Courts of Quarter Sessions in rating matters should be discontinued, they proposed that official arbitrators should hear appeals. The memorandum also expressed the view that the present jurisdiction of Assessment Committees should not be disturbed. Since then negotiations, which are still in progress, have taken place between the Conjoint Conference and the Rating Surveyors with a view to reconciling as far as possible the divergence of opinion revealed by the two memoranda.

The extension of the present quinquennial period until April, 1941, has given rise to a certain amount of difficulty and misunderstanding on the part of rating authorities who

have placed various constructions upon a letter from the Ministry of Health, which suggested that provisional lists should be prepared " by proceeding with the preparations for revaluation which have already been commenced by many local authorities."

Some authorities have asked undertakers to supply information, informing them at the same time that such information would be used only for the preparation of the provisional lists suggested by the Ministry. Others, however, are seeking to carry out forthwith a wholesale reassessment of undertakings throughout their area, and appropriate advice has been given to them in accordance with the circumstances of the position.

In July the Minister of Health appointed a Committee " To consider allegations which have been made that a strict application to certain classes of property of the existing law of valuation for rating purposes would cause undue hardship, and if these allegations are found to be justified, to report what amendment of the law is desirable."

The Conjoint Conference determined to seize this opportunity of again staging a protest against the existing method of assessment of public utility undertakers. It was ascertained that the Committee would be prepared to consider representations and a memorandum was submitted. Since then, however, the Committee has notified the Conference that their terms of reference are so limited as to exclude consideration of the particular aspects of the law of rating and valuation to which the Conference took objection.

Despite meetings first with representatives of the Catchment Boards Association and later with representatives of a new body which has taken its place—the Association of Drainage Authorities—final agreement has not yet been reached as to the method whereby public utility associations should be assessed to the drainage rate. Both sides are anxious that a settlement should be reached and tentative proposals have been put forward, but it would appear that final agreement is unlikely to be reached until the law is amended.

Smoke Abatement

During the year the Smoke Abatement Campaign has made substantial progress, and the Council has lost no opportunity of furthering it. The result has been a marked awakening not only of local authorities, but of the public generally, to the dangers to health and amenity resulting from the misuse of coal. In February a conference called by the National Smoke Abatement Society, and presided over by the Chairman of the London County Council, considered what administrative steps might be taken to promote smoke abatement, and various suggestions were put forward on behalf of the Gas Industry. Since then the growing concern of those in authority in London has been manifested both in speech and writing, while the interest of the public in the question has been aroused by various means, prominent among which was the striking Exhibition entitled " Clear Smoke from the Air " staged at the Charing Cross Underground station by the Gas Light and Coke Company on behalf of the Smoke Abatement Society.

The agitation against the smoke menace has by no means been confined to the London area only. In populous centres all over the country the subject is being discussed, and the Council is seeking to foster opposition to a state of affairs which has been allowed to persist far too long.

Gas and the Services

While smoke abatement may not have been a primary consideration with the War Department, which has to scrutinize costs very closely, it is interesting to find that there has been a considerable increase in the use of gas in buildings under their control. In 1937 they intimated their willingness to take a supply of gas for married quarters, and the Council was consulted in regard to the terms upon which supplies could be given. Since then they have decided as a matter of principle that wherever gas is obtainable on competitive terms gas-fired steam boilers are to be used for the systems of central heating, hot water supply, and steam cooking, which are being installed in all new and reconstructed barracks and depôts. Subject to like conditions the use of gas has also been authorized for cooking and other purposes in cook-houses, institutes, and elsewhere. Several agreements to supply gas have already been negotiated by individual Undertakings.

Negotiations are also proceeding with the Air Ministry with a view to the extension of the use of gas on their premises.

The efforts previously made to extend the use of gas on the premises of two of the Railway Companies have borne further fruit, and it is to be hoped that their present insistence upon a square deal for themselves may lead other Companies to consider whether the same admirable policy should not be adopted towards those who are among their best customers.

Further impetus to the use of gas for industrial purposes has been given by the speeding up of the re-armament programme, and many additional gas-fired furnaces have been installed for the production of munitions. Both in this and in more pacific industrial spheres the Industrial Gas Development Centres have proved of great value, and the method of disseminating the knowledge and experience gained at individual Centres now in use has been instrumental in enabling undertakings to meet satisfactorily many varied and hitherto unsuspected requirements.

Reference has already been made to some of the national organizations with which the Council has co-operated during the year, and it is not possible to set out here the various contacts it has maintained with others. Suffice it to say that the ramifications of its work have brought it into touch with some fifty organizations covering a very wide field.

The Council's service to individual members, which naturally grows with its more general work, has been fully maintained during a year in the course of which many difficult questions, legal and otherwise, have presented themselves.

Progress in Scotland

After a year in which it has played so prominent a part, it would seem appropriate to make some separate reference to the progress of the Gas Industry in Scotland. The latest available statistics show that the Scottish Gas Undertakings now serve 1,119,433 consumers, an increase of 7,276 during the last twelve months. Of these, 616,965, or about 55%, are prepayment consumers. The output of gas has also increased during the year, the make for 1937-38 being 31,302 million cu.ft., 2·7% more than that for the year 1936-37. These increases, following on similar ones, show a growing tendency for the community to use more gas.

This increased demand for gas has naturally necessitated a number of schemes of reconstruction and additions to exist-

ing gas-making plant, and from the sales end better facilities for selling appliances in the way of showrooms. Several undertakings in Scotland are building new showrooms, and others are contemplating the building of them. In the case of those with new premises recently opened, large increases have been reported in sales.

There are approximately 200 gas undertakings in Scotland of which one-third are owned by local authorities. These include nearly every undertaking of any size, and the majority of these undertakings have reported excellent progress during the last year. A point of interest to note in the healthy state of the Gas Industry in Scotland is the large purchases of gas that have been made for industrial purposes. This is especially noticeable in the industrial areas. Gas is also extensively used in urban areas for baking, confectionery manufacture, laundering, fish frying, catering, and other light trades. Its use is also extending for shop heating and for central heating and air conditioning. Public buildings, blocks of offices, schools, cinemas, and hospitals are examples of premises where automatically controlled gas-fired central heating is installed, and there is also a growing field for this application of gas in the private house.

Large-scale water heating is another demand for which gas, with its thermostatic control, is eminently suitable. Swimming pools, sports pavilions, schools, hospitals, and hotels come under this category.

In the field of public lighting, within the last twelve months or so several first-class installations of street lighting have been installed in Scotland, and at the moment negotiations are pending with a view to extending these installations. Long-term contracts, as well as a large number of agreements for shorter periods, for gas lighting have been completed.

Dealing with gas in the domestic field, it is here that the work of the Industry and that of housing authorities is closely allied. This alliance is reflected in the number of installations in housing schemes of all sizes. It is interesting to note the increased use in Scotland of the gas-ignited coke fire for domestic heating, and it seems reasonable to suggest that this increased interest on the part of the general public will be maintained.

It would not be out of place to mention briefly the part which Scottish gas undertakings played in the Empire Exhibition at Bellahouston Park, Glasgow. In addition to contributing handsomely to the funds of the British Commercial Gas Association, who were responsible for the National Exhibits, they provided the bulk of the personnel necessary for staffing these exhibits. The Gas Industry in Great Britain was represented at the Empire Exhibition by five main exhibits: The Gas Pavilion, ground site; industrial exhibit, Palace of Engineering; coal carbonization exhibit, United Kingdom Pavilion; Women's Gas Council, Women of Empire Pavilion; and Glasgow Corporation Gas Department, City of Glasgow Pavilion.

At the Exhibition 95% of the catering was undertaken by gas, and through the 90 odd meters installed throughout the Exhibition Grounds the gas consumption for the period of the Exhibition exceeded 47 million cu.ft. This exemplifies the way in which Scottish gas undertakings are ready to co-operate in any National scheme.

The Industry in Scotland has never been in a more flourishing condition than it is to-day, despite severe competition and other difficulties, not the least of which are the increased cost of coal and the difficulties existing at present with the inland market for coke.

Amalgamation and Grouping

Activity in the sphere of amalgamation and grouping, although still very considerable, was not on quite the same scale last year as in 1937. It is satisfactory to note that the work of merging contiguous undertakings continues unabated, and that the Holding Companies' efforts in that direction are becoming even more marked following their acquisition of neighbouring undertakings.

Dealing first with "physical" amalgamations, by which we mean the absorption of one undertaking by another, it will be recalled that early in the year the South Shields Gas Company ceased, after 113 years, to lead a separate existence, being taken over by the Newcastle-upon-Tyne and Gateshead Gas Company despite the vigorous opposition of four municipal authorities. An offer was made by the Coatbridge Gas Company for the Undertaking of the Airdrie Corporation, who rejected the offer and proposed erecting new plant at their works; later, however, the Corporation rescinded their decision and decided to hold a plebiscite of the ratepayers. Loughborough Corporation formally took over the Quorn Undertaking, which now receives a bulk supply of gas. St. Helens Corporation acquired the Rainford Gas Company. Huddersfield Town Council approved an agreement to purchase the Undertakings of the Honley U.D.C. and the Holmfirth and New Mill Gas Companies, which it is proposed to supply from Huddersfield when the necessary powers have been obtained from the Board of Trade. Following the United Kingdom Gas Corporation's acquisition of the Rossendale Union Gas Company's Undertaking at Cloughfold, the Ramsbottom Gas Company (another United Kingdom Undertaking) and the Rossendale Company were amalgamated, gas being manufactured at Cloughfold.

An offer by the Brighton, Hove, and Worthing Gas Company was accepted by holders of 90·8% of the total ordinary stock of the Arundel Gas Company. The Board of Trade granted the Chorley Corporation powers of vesting in the Corporation the Undertaking of the Blackrod Gas Company. The Middlesbrough Corporation Gas Committee agreed to take over the Stokesley Gas Company and applied to the Board of Trade for the necessary Special Order. The Tottenham and District Gas Company acquired St. Margaret's Gas Company. Subject to the consent of the Board of Trade, the Wollaston Gas, Coal, and Coke Company was merged with the Wellingborough Gas Light Company, who will be solely responsible for gas manufacture. The purchase of the Burwash Gas Company was one of the provisions of a Special Order for which the Wadhurst and District Gas and Coke Company applied to the Board of Trade; the Wadhurst Undertaking is controlled by General Gas and Electricity Company, Ltd.

The Bath Gas Company applied to the Board of Trade for a Special Order empowering them to take over the Undertaking of the Calne Corporation. Among the objects of a Special Order for which the United District Gas Company applied to the Board of Trade was the transfer to the Company of the Gas Undertaking in the parishes of Bampton and Aston Bampton, belonging to General Gas and Electricity Company, Ltd. The North Cheshire Gas Company, a subsidiary of the United Kingdom Gas Corporation, took control of the Dukinfield, Hyde, and Denton Companies, all of which are U.K. Undertakings, gas for the group being supplied from Hyde. Two Undertakings controlled by the Severn Valley Gas Corporation, Ltd.—Chepstow and Caldicot—were amalgamated, Chepstow applying subsequently for the

necessary Order. A main is now being laid from Newport (Mon.), a third S.V. undertaking, to supply both undertakings with coke oven gas, which the Newport Company receives from the coke ovens of the British Benzole and Coal Distillation Company at Bedwas. The absorption of the Totnes and Bridgetown Gas Light and Coke Company by the Torquay and Paignton Gas Company was completed, and the former Company ceased to exist as a separate entity.

A provisional agreement for the amalgamation of the Chichester Gas Company and the Bognor Gas and Electricity Company was presented to the shareholders of both Companies. The Ilkley U.D.C. applied to the Board of Trade for a Special Order with the object of amalgamating their Gas Undertaking with that of the Burley-in-Wharfedale U.D.C. The Leicester City Council purchased the Undertaking of the Narborough, Blaby, Enderby, and Whetstone Gas Light and Coal Company on terms provisionally agreed upon. Darlington Corporation applied for a Special Order with the object of acquiring by agreement the Gainford Undertaking.

The Holding Companies

Perhaps the most interesting development of the past year, as far as the Holding Company movement is concerned, was the announcement by Close Brothers, Ltd., Secretaries of the South-Western Gas and Water Corporation, Ltd., that consequent upon Mr. S. J. Ingram's retirement from the position of Chairman and Technical Director, Mr. R. B. H. Ottley, Chairman of the United Kingdom Gas Corporation, Ltd., had been appointed a Director and Chairman of the South-Western, and arrangements had been concluded whereby the latter obtained the benefit and commercial resources of the United Kingdom Corporation in the management of its constituent companies.

Further acquisitions in the West Country by Associated Gas and Water Undertakings, Ltd., include the Bridgwater Gaslight, Taunton and District, and Wellington Gas Companies in Somerset, and the Bideford Gas and Coke Company in Devon, in which county they also control the Barnstaple and Ilfracombe Companies, bringing the total number of constituent companies up to twenty-one. The British Gas Light Company—pioneers of the movement—added to their acquisitions in Norfolk, where they now control fourteen out of the county's twenty-one undertakings, by taking over Sheringham.

The Caledonian Gas Corporation, Ltd., brought the number of their acquisitions up to nineteen by taking over the Thurso and North of Scotland Gas Corporation, Ltd., which owned gas undertakings at Golspie, Sutherland, and Thurso, Caithness, with head offices at Elland, Yorkshire. The Cambrian Gas Corporation, Ltd., have changed their name to North Cambrian Holdings, Ltd., which more truly reflects their policy, and the personnel of the Board is now Major G. W. Davey, Chairman, E. G. F. Davey, and J. H. Barber, who also acts as Secretary.

In the neighbourhood of Stoke-on-Trent, Gas Consolidation, Ltd., have taken over the Undertaking of the Churnet Valley Gas Company, Ltd., thus adding to their already well-defined geographical group. An offer for the Undertaking of the Bethesda U.D.C. was made by the Holyhead and North Wales Gas and Water Corporation, Ltd. The Palatine Gas Corporation, Ltd., ceded the Ashton Gas Company to Gas Consolidation, Ltd.

Application for a Special Order authorizing the purchase of the Nantwich U.D.C. Undertaking was made by the Nantwich Gas Company, a constituent company of the Severn Valley Corporation. An offer by this Corporation for the Undertaking of the Shrewsbury Gas Light Company was accepted by the Directors of the Company. The Board of Directors of South-West Utilities, Ltd., has been strengthened by the inclusion of W. H. Bennett and J. H. Donaldson, both of whom are also Directors of Associated Gas and Water Undertakings, Ltd.

A net gain of five undertakings was recorded by the United Kingdom Gas Corporation, Ltd. Actually undertakings acquired numbered nine, but owing to internal reorganization and rationalization, a number of controlled undertakings were amalgamated with one another. The new acquisitions were Aspley Guise and Woburn Sands and Stony Stratford in Buckinghamshire, where the Corporation already control three undertakings; Elland-cum-Greetland, Hemsworth, Grimethorpe and District, Knottingley, and Yeadon and Guiseley, in Yorkshire, bringing the total for that county up to twenty-four; Gowerton in Glamorganshire, where there are at present five constituent companies; and Littleborough and Rossendale Union in Lancashire, bringing the total for that county up to eight. The number of undertakings in the Corporation's group is now forty-nine.

The Institution of Gas Engineers

The Institution has again experienced a year of great activity. Membership continues to increase, and 104 new members were elected this year—62 at the Annual General Meeting, when Lord Dudley and Dr. F. S. Sinnatt were elected Honorary Members, and 42 at the Autumn Research Meeting.

At the 75th Annual General Meeting, which was held in the Great Hall of The Institution of Civil Engineers, one of the outstanding events was the award of the Birmingham Medal to Sir David Milne-Watson. The Institution Gold Medal was awarded to Mr. C. F. Broadhead, the H. E. Jones London Medal jointly to Mr. H. Hollings, Mr. W. K. Hutchison and Dr. R. H. Griffith, the Institution Silver Medal to Mr. J. E. Dixon, and the Institution Bronze Medal to Mr. F. O. Hawes.

The Papers presented at the meeting and the works visits in connexion therewith constituted a well-balanced programme, containing items of interest to all engaged in the technical work of the Industry. The number of acceptances received for attendance at the Meeting from members, guests, and overseas visitors was greater than ever before. The reception and dance in the Great Room of Grosvenor House was attended by over 1,000 members and guests. At the termination of the meeting, Mr. Robert Robertson (Bristol), Senior Vice-President, was elected President of the Institution; Mr. George Dixon (Nottingham) became Senior Vice-President; and Sir Frederick West was elected Junior Vice-President.

The Benevolent Fund has benefited by a number of special donations, but further contributions are urgently required. In this connexion attention was drawn during the year to the scheme whereby additional income will accrue to the Fund if subscribers convenant with the Institution for a period of seven years.

The 10th Autumn Research Meeting was held in London early in November. It was with a keen sense of regret that Mr. Dixon, in opening the meeting, had to announce that the President, Mr. Robert Robertson, was unable to preside

owing to an attack of influenza. Thirteen reports and papers were presented and discussed. A good attendance was maintained throughout, and there was frequently insufficient time to accommodate all those who would have liked to take part in the discussions. Particular regard was paid to the 43rd Report of the Joint Research Committee of the Institution and Leeds University, describing work on complete gasification and methane synthesis which may have far-reaching effects in the economy of the Industry. This work, in which the Fuel Research Board is co-operating, has now reached a stage when it is ripe for increasing the scale of the experiments.

The investigations described in the 42nd and 43rd Reports of the Joint Research Committee brought to a conclusion the close collaboration of the Institution with Professor John W. Cobb in his capacity as Livesey Professor of Coal Gas and Fuel Industries with Metallurgy at the University of Leeds since 1912. As a mark of appreciation of the services rendered by him to the Institution and to the whole Gas Industry, the members of the Joint Research Committee and of the Liquor Effluents and Ammonia Committee entertained Professor Cobb at luncheon on the last day of his tenure of the Professorship and presented to him an inscribed silver waiter as a memento. Professor Cobb is continuing to serve on these Committees. The new Livesey Professor Dr. D. T. A. Townend, succeeded Professor Cobb on Oct. 1, and he is also a member of several of the Institution Committees. He is, *inter alia*, a specialist in problems relating to flame and gaseous combustion.

Education

It is fitting to consider education against the background of the 10th Autumn Research Meeting for, vital as research is to the continued development and expansion of the Gas Industry, its value both in quantity and quality, and its digestion and assimilation, must depend on the standard of education of those now joining the Industry. It is, therefore, particularly pleasing to record that there were 28 entrants to the Diploma Examination, of whom 17 were successful, two of them gaining the Charles Hunt Memorial Medals—J. Malsbury, B.Sc. (Hertford), the medal for the Diploma in Gas Engineering (Manufacture), and J. B. Walsh (Stockport) that for the Diploma in Gas Engineering (Supply).

Education has this year received particular but not more than merited attention. Sir Frederick West devoted his Young Memorial Lecture, given at the Annual Meeting of the North British Association of Gas Managers at Largs in September, to education in the Gas Industry; Sir Alfred Faulkner (Under-Secretary for Mines) singled it out in his speech at the Autumn Research Luncheon when he said that "it was an excellent thing that the Institution had set so high a degree of technical qualifications for those who were to be members or associate members; there was nothing which did more to maintain and to raise the status of a profession than that there should be high technical qualifications for membership of its governing body"; while the President, on Oct. 15, gave an address on Education to the Western Junior Gas Association.

Only passing reference need here be made to the question of ensuring adequate salaries for gas engineers, but it may be stated that the Council of the Institution has been seriously concerned about the present position and is giving close consideration, in collaboration with its affiliated District Gas Associations, to devising appropriate and effective means of bringing about an improvement.

While the raw material of the Industry has been so much before the public in connexion with the Coal Mines Act, the rational utilization of this great national asset was discussed in one of the outstanding Papers of the year—namely, that on Coal Carbonization and its Importance in the Life of the Nation, read by Mr. E. V. Evans before the Royal Society of Arts on March 3.

Co-operation with Other Bodies

The Institution has continued its co-operation with other technical organizations on matters of common interest. This year it co-operated with the Institution of Automobile Engineers and other Societies in a Joint Meeting in London on March 1 to discuss "Essential Road Conditions Governing the Safety of Modern Traffic." The President represented the Institution at the International Conference on Oil Shale and Cannel Coal held in Glasgow from June 7 to 9. The Institution also co-operated with other leading Engineering Institutions in organizing the International Engineering Congress held in connexion with the Empire Exhibition at Glasgow from June 21 to 25, where it sponsored a special Session at which Sir David Milne-Watson read a Paper on "The Gas Industry—Past, Present, and Future," and Mr. R. D. Keillor (Greenock) read a Paper written by his uncle, Mr. John Keillor (Vancouver) on "Recent Developments of the Gas Industry in Canada."

At the Public Health Services Exhibition and Congress, held in London from Nov. 14 to 19, a Session was held for the first time under the auspices of the Institution, when Miss Elizabeth Denby (London) read a Paper on "Smokeless Housing Schemes" and Mr. W. L. Howe (Nottingham) on "Gas in the Service of Public Health." The Session was well attended and the Papers gave rise to interesting discussions.

There has also been active co-operation between the Institution and various Government Departments on national matters closely affecting the Gas Industry. As examples may be quoted the formulation of practical recommendations by the Air Raid Precautions Department of the Home Office concerning street lighting restrictions in time of war and of air raid precautions for Gas Undertakings; the deliberations of the Departmental Committee on Lighting in Factories, before which representatives of the Joint Lighting Committee gave evidence and which has recently published its Fourth Report; consultation with the Factory Department of the Home Office in connexion with the issue by the Institution of its Voluntary Rules for the Safe Operation of Purifiers and of a new Gasholder Record Sheet satisfying the requirements of Section 33 (2) of the Factories Act, 1937, and application to the Department, through the National Gas Council, for exemption from certain Sections of the Act; publication, with the approval of the General Post Office, of Procedure for Dealing with Escapes of Gas into Post Office Plant.

The research activities of the Institution have been extended and several new investigations have been initiated in collaboration with Universities and other Research Bodies. A preliminary survey of research in the Gas Industry has been made and closer co-operation in research between the Institution and the Society of British Gas Industries is envisaged. Further development of these research activities may be looked for in the coming year.

The British Commercial Gas Association

Two important national campaigns stand out among the activities of the Association during the past twelve months. The first of these was the O.D.B. campaign for water heating by gas; the second the smoke abatement campaign, which is at present in full swing. These are both examples of what may be called "long-term" campaigns as contrasted with the short seasonal attacks on various loads exemplified in the successful Gas Cooker and Gas Fire "Fortnights" which were also planned during the year.

The hot water campaign, with its slogan "O.D.B., the Order of the Daily Bath," aroused considerable interest among all classes of consumers. It was intended to plant a new conception of home comfort in the public mind and its success in this direction has, it is understood, already resulted in a considerable increase in the sales of hot water appliances. The campaign will be renewed in the coming spring, when it should benefit by the re-doubled force of a reiterated appeal.

That national interest in the subject of smoke pollution is rapidly passing from the theoretical to the practical has been proved by the reception given to the Association's smoke abatement campaign initiated this autumn. Supported by the admirably cogent arguments put forward by "Britain's Burning Shame," a booklet issued by the National Smoke Abatement Society, the Gas Industry's campaign has made a flying start. As Mr. Ralph Halkett remarked in an address to the Yorkshire Junior Gas Association, "It is very good business for all of us actively to co-operate in the scheme;" the Gas Industry has a very strong claim to be considered "Smokeless Fuel Provider, No. 1," for in gas and coke lies the economic solution to the smoke problem. Widespread support of the Association's efforts is therefore bound to react favourably on sales.

Municipal interest in the subject was amply proved by Mr. Herbert Morrison's address at the luncheon held in London in connexion with the Association's Annual General Meeting. "Within the limits of its powers," said Mr. Morrison, "the L.C.C. is carefully examining the whole possibility of transforming London into a smokeless city, at least so far as concerns domestic smoke, which constitutes the greater part of the problem. If the smokeless fuel industry through its various branches can satisfy us that practical alternatives to the combustion of raw coal exist, we shall not be slow to act." The Leader of the L.C.C. has been supported in his attack on smoke by the Medical Officers of Health for Leeds, Rotherham, Stoke-on-Trent, Shrewsbury, and other big towns in addresses at district conferences arranged by the Association.

From the Association's short selling campaigns several points of interest arise. The force of this co-operative selling on intensified lines is proved by the results of the Cooker Fortnight in which two in every three of those undertakings actively participating reported substantial increases in cooker sales and one in every four actually doubled their sales in comparison with the same period in 1937. Gas Fire Fortnight, in which the publicity material stressed the cheapness of an hour of gas fire warmth, brought the national marketing policy of the Industry a step forward, the same prices being carried by advertisements over a large section of the country. The international crisis and unseasonable weather combined against this campaign, but a large number of undertakings reported satisfactory sales. Another useful point about these selling campaigns is the fact that it is possible to collect and collate a mass of information on the results from the various districts; by this means weaknesses can be eliminated and future campaigns can be strengthened.

The crisis was also responsible for the postponement of the Association's Annual Conference, which was replaced by the meeting in London mentioned above and by a number of district meetings. It is satisfactory to know that Mr. A. M. Paddon is continuing in his office as President for another year and that the Conference will be held at Brighton in the forthcoming Spring.

Apart from these special national campaigns the Association has continued its publicity efforts over a wide field. In the technical Press the services of gas to industry and commerce have been kept prominently in the public eye, while architects have been specially catered for by the production of an informative booklet, "Flues for Gas Appliances," as well as by systematic advertising in the architectural Press. An issue of *A Thousand and One Uses for Gas* dealing with the provisions of the Factories Act may also be mentioned.

That the local advertising service run by the Association on behalf of individual undertakings fulfils a real need is proved by a further large increase in the volume of work ordered and carried out. At the same time the sales of publicity material prepared by the Association have risen by nearly 20% over the figure for the preceding year. Among the B.C.G.A.'s publications during the year may be mentioned issues of *A Thousand and One Uses for Gas* covering such subjects as hairdressers' establishments, the public health services and swimming pools; the *Flambeau*, the Association's attractive propaganda magazine (No. 10, Downing Street is one of the famous residences using gas described in its pages this year); an illustrated booklet on Kensal House; and *Light on the Roads*, a useful guide to municipalities desiring to improve street lighting installations in their areas in accordance with the recommendations of the Ministry of Transport's Departmental Committee. All these have had a wide circulation and have done good work for gas.

At many of the big exhibitions during the year displays of the gas films were given. In 1937 the Association's films were shown to audiences totalling over 1½ million people, an increase of almost a million on the previous year. The year under review may well see a further significant increase in audiences, for this means of advertising is growing in popularity, and justifiably so. A number of new films, produced by leading exponents of the art of the documentary film, were introduced to the Association's members in the autumn, and they should prove valuable aids in the educative work of the Gas Industry.

The two recent innovations in the Association's scheme for the education of the Industry's sales staffs—the oral test added to the Domestic Gas Salesmanship Course and the Domestic Gas Salesmanship Discussion Groups scheme—should help to strengthen this important service of the Association to its members. The public speaking competition for gas salesmen, now in its third year, is another useful adjunct to training in salesmanship. During the seven years the education of salesmen scheme has been in operation there have been 2,398 enrolments and 1,955 certificates for the Course have been issued.

In common with the Association's other departments the Display Studio reports a large increase in business during the year, sales rising by 50% over the previous period. In addition to a considerable amount of special work for members, the Studio has in operation successful window display, poster and showcard services by which members are enabled to obtain display materials regularly every month.

Demonstrators, trained in cookery and other branches of home running, are now among the most important servants of the Gas Industry, for Home Service can not only educate consumers to make the best use of gas appliances, but can do much to stave off the attacks of our competitors. The Association's Home Service Section is therefore a very vital part of its schemes for the development of gas. Advice and help on home service problems, the delivery of public lectures to women, and the selection and recommending of suitably trained candidates for Home Service posts are branches of this Section's work during the period under review.

Society of British Gas Industries

At the Annual Meeting of the Society held in May, Lord Ridley was elected President and Colonel O. B. F. Planck was elected Chairman. Just before retiring from Office as Chairman of the Council Mr. R. J. Rogers moved the election to the Society of the 50th new member within the last three years. The fact that this represents a 40% increase in membership of the Society over that period is in itself a striking tribute not only to the value of the Society, but perhaps even more does it illustrate the importance which contractors and manufacturers attach to the opportunities for fruitful co-operation in a number of directions which the Society has made the pivotal point of its policy during recent years. It is certainly notable that this material increase in membership has taken place since the formation of the British Gas Federation, and unquestionably it represents a valuable accession of strength to the Industry as a whole.

Interesting changes in internal organization, showing the trend of affairs, have taken place during the year. A new Section devoted to Builders of Coke Oven Plant was formally approved at the Annual Meeting, and, moreover, steps have since been taken to alter the title of Section XI. to cover exhausters, boosters, and compressors. Changes which have taken place during the last few years within the Industry and the increasing use of gas for industrial purposes have rendered boosters and compressors essential in most distribution systems, and it was felt that the constitution of the Society should provide for representation of firms engaged in their manufacture.

Sir Harold Hartley, President, delivered an inspiring Address at the Annual Meeting indicating the magnitude, scope, and vitality of the Industry and pointing to the unification of its interests in recent years. He also presided at the Annual Dinner in the evening, and the distinguished guest list was undoubtedly a great personal tribute to Sir Harold Hartley's association with industry and research over a very wide field.

Colonel O. B. F. Planck chose for the subject of his Address at the Autumn Meeting "An Observer's Viewpoint of the Gas Industry." He gave a comprehensive view of the problems of the Industry and showed how members of the S.B.G.I. had foreseen the necessity to keep abreast of the times, and how in their respective spheres they had continuously and efficiently modernized the plant and appliances with which they supply the Industry. In the absence of the President, Lord Ridley, the members of the Society extended a particularly cordial welcome to Sir Frederick West who presided at the Autumn Meeting.

During the year the Council of the Society has inaugurated a superannuation scheme for the members of its Staff.

While it is perhaps almost invidious among the manifold activities of the Society to select any of particular rather than general application for mention in a review of the year's work, some at least, in so far as they mark progress in co-operative working, are worthy of special comment. Through the Joint Lighting Committee of The Institution of Gas Engineers continuous efforts are being made in co-operation to improve the Industry's technical and competitive position in the field of public lighting. This intensification of effort is also being extended to factory lighting, where following upon the issue by the Home Office of the Report of its Departmental Committee, a field for co-operative effort is opening up to examine in terms of the new requirements existing gas lighting installations in factories, workshops, and yards, and to explore the possibilities of introducing new installations. As perhaps a finger-post of some importance might also be mentioned the fact that the Institution has recently sought the technical collaboration of a representative of the Society in connexion with two matters which are now the subject of special investigation—namely, noise in gas burners and stresses in spirally-guided gasholders. In the ordinary evolutionary progress of the Industry it seems virtually inevitable that the assistance of the contractors and manufacturers in research and development work, which has always been ungrudgingly given in their individual capacities in the past, should tend to be augmented more and more in the future through corporate channels. That the progress is cautious and unostentatious is probably in itself the best guarantee of ultimate usefulness.

Signs have not been lacking during the year that the Society's members are showing increasing recognition of the value both to them and to the Industry of the work which the Society is doing. That this recognition should be crystallized in the cause of development and progress must be among the chief objectives of the Society's Council, since behind it are the very notable individual records of the firms which comprise the Society's membership based on effort, initiative, and experience over a great number of years.

In its technical collaboration with the Institution, in its composite subscription to the funds of the B.C.G.A., and through membership of some of its Committees, in its financial contribution to the proposed Gas Gallery at the South Kensington Science Museum, in its support of national exhibitions—in these and in many other important directions has the Society during the past year shown its willingness with the support of its members to play that part which attaches to its position as a member of the British Gas Federation, and to shoulder the responsibilities which are inherent in it.

Exhibitions

So closely concerned is the contracting side of the Industry with this subject, that this would seem the appropriate place in our Review in which to deal with the principal exhibitions in which gas has figured during the year.

Appliance makers have indeed been called upon to incur heavily increased commitments in the period under review. The Gas Exhibit at the Birmingham Section of the British Industries Fair in February was followed by the Ideal Home Exhibition in London in April. The Birmingham exhibit was not only supported by the leading manufacturers of gas plant and appliances, but included also a representative display of industrial gas equipment so arranged as to demonstrate the pre-eminent advantages of gas for all industrial heating processes. The Gas Industry Section appealed as being the most coherent and resplendent of the organized sections of the Fair, and the official Joint Gas Conference was well attended, the lightness of the programme enabling

visitors to devote closer attention to the inspection of the exhibits.

The gas exhibits at the Ideal Home Exhibition can have left little doubt in the minds of visitors as to the pre-eminent service which the Industry offers to the public, but with the transfer next spring of this Exhibition from Olympia to Earl's Court a Woman's Fair was organized at Olympia in November. To this further call on its efforts, and indeed on its finances, the Industry responded with what might be termed a "prestige" exhibit. This bore the hall-mark of careful planning and expert design and presentation, but perhaps it is too early yet to judge of the value to the Industry of such an exhibition both actually and in relation to the many other exhibitions which it is called upon to support. Its promotion certainly throws up in strong relief the necessity for a most careful examination of the relative value of national exhibitions, whether their appeal be primarily to individual trades or to the general public.

In a category apart was the Empire Exhibition at Glasgow lasting six months, since we have to go back some 14 years to Wembley for a parallel. Full advantage was taken of the natural features of the site in laying it out, and the Gas Pavilion itself occupied a striking position. In the Palace of Engineering an exhibition of industrial gas apparatus attracted considerable attention, and in other parts of the Exhibition the gas message was also presented. The S.B.G.I. made a substantial contribution towards the cost of the Industry's participation, and its members gladly met all calls for the loan of appliances in connexion with it.

A further matter of great interest to the Industry generally has engaged much attention among those primarily concerned during the year—namely, the proposed Gas Gallery at the South Kensington Science Museum. Representatives of the S.B.G.I. are taking an active part in the work of organization, and the Society's members have responded so handsomely to the appeal for financial support that the quota which the Society undertook to endeavour to collect from the contractors and manufacturers has already been fully realized.

Technical Developments

In regard to technical developments during the year, great interest has centred in the work of the Joint Committee of the Institution and Leeds University on the synthesis of methane under pressure during the carbonizing process. The ease with which coals and cokes can be hydrogenated under pressure has been amply demonstrated. In the laboratory investigation at Leeds, coals, after a preliminary carbonization at 400°-500° C., gave on hydrogenation at 900° C. yields between 500 and 600 therms per ton in gaseous hydrocarbons while the calorific value of the outgoing gases remained above 500 B.Th.U. per ton. Cokes prepared at 800° C. gave 520 therms. This, of course, does not take into account the amount of fuel required to produce the necessary hydrogen. The work at Leeds has shown how the rate of gasification of fuels in hydrogen is accelerated by the presence of alkalis, how the addition of sodium carbonate increases the ability of coke to withstand heat treatment without losing its activity towards hydrogen, and how the admixture of alkalis considerably reduces the caking of coals. This rate of hydrocarbon production is of extraordinary interest. As an example, heating coal at 12° C. per minute and supplying hydrogen equivalent to 58,000 cu.ft. per hour per ton gave the first 200 therms of hydrocarbons per ton at an average rate of 220 therms per hour, corresponding on dilution to gas of 500 B.Th.U. per cu.ft. with a rate of gas production of 415 therms per hour per ton. The output secured from the laboratory apparatus cannot be compared directly with that obtained by normal large-scale carbonization—namely, approximately 7 therms per hour per ton—but the difference between the two is so wide as to be significant. And it has been shown that the first 200 therms in hydrocarbons per ton are ample for enrichment purposes in a process in which the residue from hydrogenation is used for hydrogen production.

It has been pointed out during the year that, in connexion with this hydrogenation process, the use of coking coal does not appear to give rise to troubles, and that the yield of tar can be controlled within wide limits by choice of the conditions. A high proportion of the nitrogen in coal is converted to ammonia, and this should be obtainable at a concentration in the liquor which would make its recovery quite a different commercial proposition from the treatment of ordinary gas liquor. Difficulties due to the presence in ordinary coal gas of hydrogen cyanide and naphthalene do not arise. Then an unusually high proportion of the sulphur in the coal is eliminated in the gas, leaving a coke of particularly low sulphur content, and the coke is exceedingly reactive. Substantially all the sulphur in the gas is present in the form of hydrogen sulphide, and after removal of this impurity there remains considerably less than 1 grain of organic sulphur compounds per 100 cu.ft. of gas.

At the Fuel Research Station an investigation on the complete gasification of coal in a modified water gas plant has shown that sized carbonaceous coals may be successfully gasified, a yield of 205 therms per ton being obtained. While coals of medium volatile matter are too highly caking to be treated by these methods, the experiments have shown that coals having a high volatile matter can be treated. The yield in therms per ton is about 18% lower than that obtained from carbonaceous coals. A further series of experiments has been concerned with the use of catalysts for the synthesis of methane from hydrogen and carbon monoxide for the purpose of enriching low grade gas in a two-stage system of complete gasification. The molybdenum catalysts were unsatisfactory, but experiments with a cobalt-thorium catalyst have given encouraging results. A description has also been given of experiments on the complete gasification of coal with oxygen and steam at atmospheric pressure in the Vortex burner.

Work has been continued during the year on the combustion characteristics of town gas, and improvements have been effected in the aeration test burner. In May last we published the results of A.T.B. number control at Bournemouth, which control was instituted because of frequent complaints of the seeming maladjustment of appliances, in spite of the gas being of reasonably constant calorific value and specific gravity. There it was found necessary to take special measures to maintain a uniform aeration test burner number. On the other hand, the report of the Joint Committee of the Institution and Leeds University presented last November put forward evidence to show that the production of gas within close limits of aeration test burner number does not necessarily involve special supervision. The report dealt with the effect of adding various constituents to town gas. The effect of adding hydrogen is most interesting. This gas has a high rate of flame propagation in air. Despite this, the effect of its addition on the aeration test burner number of town gas has been shown to be comparatively small. This fact may provide a clue to the maintenance of reasonably constant

aeration test burner number of the district gas even when very substantial use has to be made of water gas plants to meet heavy winter peak loads.

Coke and Its Utilization

The results of a joint investigation by the Edinburgh Gas Department and the Fuel Research Station into the production of free-burning coke in continuous vertical retorts have been made known during the year. Five coals having a carbon content of about 82%, drawn from four Scottish coalfields, were selected for test. The normal temperature of carbonization was reduced to 700° C., and though this reduced the make per ton to 52 to 60 therms a richer gas was obtained. The lump coke was found to burn almost as well as a standard low-temperature coke. The average yield per ton of coal carbonized was 12·1 cwt., of which 10·5 cwt. was suitable for sale as lump smokeless fuel for use in open firegrates.

On the utilization of coke, the results were given last November of a study of solid fuels used in open grates for heating living rooms. The highest radiant efficiency was obtained with gas-works coke, and this fuel also proved to be most economical in use. Earlier in the year a Paper was given to the Institution on the utilization of coke for space heating in the open fire, for automatic firing in central heating and hot water supply boilers, and for industrial drying processes in the semi-producer furnace.

In regard to carbonizing plant, a description was given last July of a test installation of the new Woodall-Duckham static vertical retort at the works of the Croydon Gas Company. This plant was designed to combine the advantages of the intermittent vertical chamber with those of the continuous vertical retort process as regards the extraction of cool coke and continuous steaming. The installation consists of a full size unit with a daily gas output of about 100,000 cu.ft. The carbonizing zone of the static vertical retort consists of a vertical retort, rectangular in plan, built of silica. The heating system is of the "lambent" type. The cooling chamber is constructed of mild steel lined with firebrick. Beneath the coke cooling chamber is placed a cast-iron box fitted with a discharge door and containing a coke extracting device of the type employed in Woodall-Duckham continuous vertical retorts. Beneath this discharge door is a coke measuring container of adjustable capacity.

When carbonization of the coal charge in the vertical retort is complete the coke discharge door is opened and the coke extractor rotated until the required amount of cooled coke from the cooling chamber is removed, the quantity extracted being measured in the coke container. The removal of the cool coke at the bottom allows the red hot coke in the carbonizing zone to descend into the cooling chamber. The carbonizing chamber is re-charged with coal and the carbonization of the new charge then commences. While the coal charge is being carbonized in the retort proper the coke is being cooled in the cooling chamber by means of steam and natural convection and radiation.

Repair of Retorts

A welding system for repair of retort leakage, developed by the Birmingham Gas Department, was described last month. This system of hot patching by blow-pipe welding is a most important advance in the technique of the maintenance of continuous vertical retorts. At Birmingham the process has been in use eight months on two continuous vertical ranges, one making 10 million cu.ft. per day and the other 2 million cu.ft. The repairs effected have made it possible to postpone cold repairs which would otherwise have been necessary, and the cost of hot repairs has been halved compared with the previous cost of repairs using cold materials. The system appears to be an efficient and practical method of preventing the growth of leaks providing it is applied soon after leakage commences to show. In these circumstances there is every promise of effecting substantial reduction in the cost of retort maintenance. Settings usually have to be reconstructed long before the greater part of the refractories are worn out, involving considerable wastage of material and labour. The process of hot repair should result in considerable savings in the cost of refractories per ton of coal carbonized. The new process has added significance owing to the growing popularity of the upwardly heated vertical retort. The great reduction in spalling which has accompanied the change in the method of heating should enable a life of an extra year or so to be obtained with the upwardly heated type. The latter, however, is prone to leakage in the lower part of the retort. At Birmingham, after twelve months' work, leakage developed in a setting of upwardly heated verticals to such an extent that immediate repair had to be considered. Actually arrangements were made to carry out the work. Then came the advent of the new welding process, and the repair programme was postponed. Hot patching was applied successfully, and at the present time the work is in splendid condition and giving the best thermal results in the Department. It has been suggested that with suitable development of the welding process, it should not be technically impossible to achieve such results as the building up of wasted, spalled, and flaked zones, the facing of refractories with special coatings and glazes, and the elimination of joints where desirable.

Oil from Coal

No review of the year in connexion with the Gas Industry would be in any sense complete without reference to the Report of the Sub-Committee on Oil from Coal of the Committee of Imperial Defence. This Committee recommended that the preference of 8d. a gallon on home-produced spirit should be maintained for a period of twelve years from 1938. During the year the "JOURNAL" has suggested that this preference should encourage the Gas Industry to recover as large a quantity of light oils as is economically possible. That was in February. Naturally the "JOURNAL" has been concerned with this "economically possible" idea, and in the issue for Dec. 14 a statement of costs of benzole recovery was put forward. A hypothetical case was taken, but the hypothesis was based on actual working results. Benzole recovery is important from two points of view. First, benzole is an excellent motor fuel on account of its anti-knock properties; secondly, it is a raw material required in times of emergency as a source of high explosives. Coke ovens and other systems of static carbonization are more effective as sources of high explosives, but the spirit which is easily, and economically, recoverable from continuous vertical retorts would be invaluable as motor fuel in time of war. The "JOURNAL" has expressed surprise at the reluctance of the Gas Industry to take advantage of this guaranteed preference of 8d. a gallon, and has suggested that the reason underlying this reluctance is fear of the coke market. The "JOURNAL" has also suggested that this fear is unwarranted.

If one examines the amount of benzole which is being extracted by the gas and coke oven industries in relation to

the total quantity of light spirit consumed annually in this country one finds that it represents about 4% of the total requirements. A small percentage, agreed; but the quantity involved is as great as the petrol produced from oil and coal by the hydrogenation process at the Billingham Works of Imperial Chemical Industries. And the contribution of the carbonizing industries could be greater.

The Sub-Committee on Oil from Coal was obviously impressed by the technical possibilities of synthesis of oils from coal by way of water gas, and it put forward the view that it would be useful if some commercial concern, or combination of firms, was willing to provide the capital for large-scale trials of the process in this country. But it expressed the opinion that witnesses in support of the synthetic process were obviously influenced in their views because of the scale of development in Germany.

Then, as regards the Committee's findings about low-temperature carbonization and its potential influence on the production of motor spirit and other oils from indigenous materials, it came to the conclusion that the low-temperature carbonizing process is first and foremost a coke making process, and that its commercial value depends on the remunerative disposal of its solid smokeless fuel. And as far as the Gas Industry is concerned, a significant observation in the report of the Sub-Committee was that whatever is done by way of legislation on the question of smoke abatement, low-temperature coke is likely to meet in future with increasing competition. The "JOURNAL" has expressed the hope that it *will* meet with increasing competition, for in the installation of open firegrates designed for the burning of high-temperature cokes lies a proved means of reducing the price of gas. In the view of the Committee, "low-temperature carbonization must in the light of existing information be ignored as a possible major source of indigenous oil supply. To the extent that low-temperature carbonization can develop on normal lines it will, like the other carbonization industries, make a contribution to the problem of smoke abatement and efficient fuel utilization, and at the same time will provide some addition to the country's supplies of home-produced oils."

The lesson to be learned from the Sub-Committee's report on oil from coal is that the Gas Industry could and should make a greater contribution to the nation's supply of raw material for high explosives and of spirit suitable for use in the internal combustion engine.

Public Lighting

Gas continues to forge ahead for the lighting of our thoroughfares. The latest official statistics show a considerable increase in sales for this purpose to local authorities in 1937—from 13,908 million cu.ft. in 1936 to 14,483 million cu.ft. in 1937. Since 1921 the quantity of gas sold for public lighting has more than doubled, and there is no doubt that the year 1938 will show a further advance. 1937 was, of course, what may be termed a bumper year in the way of introduction of new gas lighting equipment of improved performance fully able to meet the most stringent modern requirements. The effect of the Final Report of the Ministry of Transport on public lighting, published towards the close of 1937, has had its effect on better gas installations being erected during the past twelve months, advantage having been taken of the new equipment to which we have referred. It was excellently displayed in the exhibition held in connexion with the annual conference last September of the Association of Public Lighting Engineers, when optimism as to the future of gas lighting was never more evident. At that exhibition, in addition to emergency lighting and extinguishing systems, features of particular interest included solar dials to compensate for the varying hours of sunset and sunrise without the need of re-setting clock mechanisms; lamps which can be operated by the quantity of light falling on light-sensitive cells; safety cut-off devices to obviate fire should standards or bollards be knocked down; improved raising and lowering gear; and several other developments which increase the general efficiency of gas lighting units.

In our columns during the past twelve months we have referred to many new long-term contracts for public lighting and all-round improvements of existing installations. Details have been given of several gas lighting installations erected by small undertakings which had at their disposal expert advice and assistance, through co-ordinated control, from a central office. A good deal of headway has been made by gas undertakings erecting demonstration lighting installations so that local authorities can see for themselves what modern gas lighting means.

At the conference of the A.P.L.E. criticism was made that the Gas Industry is not sufficiently ambitious in regard to main street lighting schemes, that so far the Industry has been prone to erect installations which give an output only slightly in excess of the 3,000 lumens per 100 ft. linear recommended by the M.o.T. for Class A roads. It has been forcibly pointed out, however, that siting is more important than the mere provision of lumens. If the lumens are skilfully applied an installation can be carried out just as satisfactorily with a lower lumen output. Good visibility, of course, cannot be achieved unless the quantity of light falling upon a road and other essential backgrounds exceeds a certain minimum, but visibility, it has been emphasized, does not increase *pro rata* to luminous output. It depends on the type of installation, but there must be many instances in which no good is achieved by increasing luminous output, because it does not improve visibility if there is a sufficiency in the first place and the installation is scientifically planned—and the additional lumens have to be paid for.

Among other matters discussed during the year have been those of maintenance and central suspension of light sources. It has been rightly stressed once again that in regard to maintenance of luminous output gas has everything in its favour. In practice adequate maintenance proves quite economical, and the luminous output of gas is practically constant—so much so that many undertakings have accepted a contract obligation on a basis of 20% variation. In regard to central suspension of light sources, in certain circumstances this may be the only solution to effective illumination of the road—where roads are lined with trees which, with sidewalk siting of lamps, would interfere dangerously with safe visibility. In general, however, consensus of opinion has been against central suspension, inasmuch as it tends to make the driver hug the crown of the road to avoid accident due to an ill-defined, confusing, or light-obliterated kerb.

Though not strictly "public" lighting, reference should be made to the recently published Report by the Home Office of the Departmental Committee on Lighting in Factories, which provides the Gas Industry with an excellent opportunity. This Committee have recommended that over the interior working areas of any factory the illumination at floor level, or at 3 ft. below the level at which work is carried on, must not fall below 1·0 foot-candle. Then, over parts other than working areas, over which persons employed are liable to

pass, the illumination at floor level must not fall below 0·5 foot-candle. Over all open yards, passages, roadways, and the like, upon which persons are employed or over which they are liable to pass, the illumination at floor level must not be allowed to fall below 0·1 foot-candle. In regard to processes requiring discrimination of detail, the Committee stated that it appreciated the need for legal minimum standards of illumination, but that the range of such processes is so complex and variable that statutory provision is a matter of difficulty. However, it proposes to proceed immediately with the necessary scientific investigation from the results of which an appropriate legal minimum standard might be deduced. Other recommendations in the report covered the suppression of glare, the avoidance of extraneous shadow, and the prohibition of unsuitable light sources.

Gas lighting can contribute to a marked degree to the warming of factories and workshops in accordance with the Factories Act, 1937. Its installation performs a dual function. It has been shown during the year, taking the case of a factory heated by radiant gas panels, that with an illumination of 5 foot-candles at the working plane, the lighting would contribute 30% of the heating requirements, while with an illumination of 15 foot-candles its contribution would amount to 90% of the heat requirements.

It may be said, then, that as far as lighting is concerned, the past twelve months have proved an active period for the Gas Industry.

The Coke Market

The past year has marked the Jubilee of organized selling in the British Coke Industry, for it was in 1913 that the London Coke Committee—the forerunner of the present London and Counties Coke Association—came into being with the object of co-ordinating and developing the coke market in the Metropolis. To what extent that initial step succeeded may be judged by the high degree of efficiency into which the coke market has since been brought and by the widespread adoption of controlled selling schemes in other parts of the country. Such activities have been particularly marked during the past twelve months, based on the lines formulated by the L.C.C.A.

It might be claimed that the success which has attended the operations of the London and Counties body has been consequent upon the equity of its policy. It has always held the view that it was sound business to study and provide for the requirements of the fuel consumer as a primary condition of market development. It was obvious, too, that if such a body attempted to boost up prices beyond an equitable balance between the producer, the retailer, and the consumer, then the prices would cease to be economic to the consumer, with inevitable falling off in demand—a condition which would defeat the fundamental object of controlled selling schemes.

Such a policy has characterized the new organizations which have been formed, or have been under consideration, during the past year. The Midland Coke Association, with headquarters at Birmingham, has come into being and has instituted price control on lines similar to the L.C.C.A., while there has been valuable co-operation between the two bodies in regard to development work and technical service. In Scotland, too, a sub-committee has been formed with the object of initiating an organization on the same lines, and the necessary support is now being solicited from gas undertakings North of the Border. In Lancashire and Yorkshire negotiations are also taking place, and co-operation with the producers of furnace coke is under consideration in both areas. The organization on the North-East Coast, which has been in operation for some time, has continued to work smoothly and efficiently and has been considering the broadening of its scope in other directions which will assist the co-ordinated sales of coke. In addition to economic price control and the elimination of cut-throat competition, the keynote of the policy of these organizations has been efficiency in utilization, and plans are being formulated for the extension of technical services to this end.

Turning to the work of what we may term the "parent body," the L.C.C.A. has extended its sphere of operations to embrace all the Western Counties with the exception of Cornwall, where a small organization has been in existence for some time and is for the moment adequate to meet the needs of this area. A scheme for the Bristol, Swindon, and Weston-super-Mare districts has been instituted, while another for Devonshire and West Somerset will be brought into operation in the near future—so that the whole of the West Country will be co-ordinated under an effective price control scheme by next July. All this development serves to illustrate that the coke business of the Gas Industry has been tackled during 1938 on more comprehensive lines than at any other time in the history of the Industry.

No price control scheme could hope to operate successfully, however, without the co-operation of those who distribute the product to the consumer; and the past year has shown an increasing desire on the part of merchants, factors, and dealers who handle gas and furnace coke to associate themselves with a system which they themselves fully appreciate will bring benefit to all concerned. Those distributors who have had experience of the L.C.C.A. scheme are already keen supporters of a system which has brought stability to markets where chaos existed previously both as regards price and development. It is of interest to record that throughout the area of the L.C.C.A. 66% of the total coke sold passes through the hands of the distributive trade. Efforts are being made in all areas to bring the merchants into sympathy with the scheme, which will make for efficiency of operation.

Improved Quality

During the year the Monckton Committee has been investigating the methods and costs of solid fuel distribution, and the L.C.C.A. has submitted a Memorandum on behalf of coke covering the distributive trade and the producers. In the South of England the methods adopted and the costs of distribution have been regulated for some years, so that the position here is much more stable than is the case in the coal industry, where conditions have been erratic.

Price levels have been well maintained and have, in fact, been almost identical with those of 1937; and while the fuel markets generally finished on a weaker note than this time twelve months ago, there is little indication that the price of coke will suffer much reduction, if any. The year has seen an increasing effort on the part of gas undertakings to improve the quality of their coke, more especially for the open domestic fire. The greatest obstacle has, of course, been the difficulty in obtaining the correct classes of coal. In spite of this, however, it may be said that there has been a fairly general improvement in the quality of coke produced in an effort to meet domestic requirements, so that on

balance the position is better than would have been the case if the unsuitable classes of coal had been allowed to have their natural effect on the quality of coke produced. It should be mentioned, in passing, that a number of open coke grates have lately been fitted in Government Offices as well as in the House of Commons. This is a definite achievement for coke, and it is confidently anticipated that the tests now being made with these fires will lead to greater numbers being installed in similar situations in the future.

With regard to central heating, coke has taken a very full share of all new business, and the gravity-feed boiler has been instrumental in enabling many new buildings to be equipped with boilers the efficiency and economy of whose operation shows up very favourably in comparison with coal-burning appliances. In line with their policy of what may be termed "market research," agricultural work has occupied a large proportion of the time of the technical officers of the L.C.C.A. during the year. While the development of coke-fired plant for the drying of grass and other crops has made steady progress, improvements have also been effected in appliances for orchard heating and in the cultivation of plants by soilless growth from the viewpoint of heating requirements. A new development which has been engaging the attention of the technical side is the provision of coke heating for piggeries and farrowing sheds, and it has been established that better bacon-producing pigs can be reared in properly heated surroundings, in addition to achieving a definite saving in feeding costs.

Notable among the activities of the past year has been the launching of the first coke advertising campaign which has been undertaken on any large scale since this fuel was brought into general domestic use. It has come at a very appropriate time, synchronizing as it does with a growing public consciousness of the terrible smoke evil which exists in this country at the present time. While avoiding anything that may be detrimental to the gas market, the campaign has had as its underlying principle the focusing of public attention on the possibilities of coke as an effective and economical labour-saving fuel for household purposes—and a smokeless one as well. The campaign has further been aimed at bringing the view of the coal merchants into line with coke developments. The majority of merchants deal with both coal and coke, but it is only in recent times, and through their liaison with organized coke selling organizations, that they have adopted a coke "perspective." The campaign has undoubtedly strengthened the merchants' outlook in this direction, while they have been included in the scheme by the issue to them of the advertising pamphlets which have accompanied the Press publicity.

Finally, it may be observed that the increasing recognition which is being given within the Gas Industry to the vital importance of the coke market was evidenced by the prominent place which Papers on this subject have taken in recent times, both before The Institution of Gas Engineers and the District Associations. In addition, the London and Counties Coke Salesmen's Circle has continued to flourish and has extended its useful work in educating those whose job it is to sell coke and to assist consumers on the district to obtain the fullest satisfaction from their coke-burning appliances. Such a movement is undoubtedly necessary in the new coke selling and servicing technique. We may conclude on a thought which emanated from the last meeting of that Circle—the year 1938 has shown a further step towards a complete realization of the fact that coke is no longer merely a residual of the Gas Industry, but rather a first-class revenue-producing product.

By-Products

Turning now to by-products, home prices for sulphate of ammonia have remained the same as last season, although cost of production has increased, because wages and repairs and maintenance materials have advanced. The production of concentrated gas liquor was estimated at 45,000 tons in 1936. This year it has reached 112,000 tons, expressed as 25¾% ammonia of which quantity 34,000 tons was subsequently converted to ammonium salts. A tolerable quantity is being used for the manufacture of soda ash, and the balance for the production of phosphatic-nitrogenous fertilizers, ammonium carbonates, and for the conversion of ammonia to nitric acid. Central works are now dealing with at least 30,000 tons per year, and this quantity is bound to grow.

Most gas-works recover 12 lb. or more of sulphur, as spent oxide, per ton of coal carbonized, as against about 5 lb. of free ammonia. To avoid a fall in the price of spent oxide, future installations of concentrated gas liquor plant should provide for the removal of the fixed ammonia. Plants for the production of concentrated gas liquor have been installed during the year embodying partial decarbonation near the end of the condensing system. This process is covered by patent No. 494,023 (E.P.), and it represents a marked advance on previous technique and simplifies operations. The gases are withdrawn after the bulk of the ammonia has been condensed, and prior to the absorption of all the CO_2. In this way CO_2 is evolved with a controlled amount of ammonia, which can be absorbed in gas liquor fed to a suitable scrubber.

Record should be made of the publication by The Institution of Gas Engineers of "Gasworks Effluents and Ammonia," by Dr. A. Key. This book summarizes the work of the Liquor Effluents and Ammonia Committee over many years. Those who are concerned with effluent-disposal problems will find all they need to know on the subject; those who wish to find information on the treatment of their gas liquor can consult it with advantage.

During the year increasing attention has been directed to the improvement of the quality of by-product sulphate of ammonia at gas-works and coke ovens. A larger crystal is desired, having a length-to-breadth ratio of about 3 : 1. Hardness of the crystals and satisfactory whiteness are also sought. This studied attempt to improve the quality of sulphate of ammonia will result shortly in the establishment of standards relating to grist characteristics and colour of the crystals. Superphosphate manufacturers, in order to ensure greater efficiency of application, find it necessary to granulate not only their production of calcium superphosphate, but also their N.P.K. mixtures. There are apparently two sizes, ranging from 1 to 1·6 mm., and from 1·6 to 2·5 mm.

It is interesting to observe that the production of sulphate of ammonia at gas-works in England and Wales in 1937 was 122,400 tons, expressed as 25¾% ammonia, as against 120,300 tons in 1936 and 109,200 tons in 1935. But the production at other works (including coke ovens, iron works, producer gas, synthetic, &c.) in England and Wales increased from 461,700 tons in 1935 to 535,600 tons in 1937.

Synthetic nitrogen plants, on an average, operated at only 50% of capacity during the year. The world production capacity for synthetic nitrogen, including cyanamide, is estimated at 3,900,000 tons of nitrogen. The total consumption increased by 258,099 tons, or about 10·7%, following an increase of 16·7% for the year 1936. The order of importance in the production and consumption of nitrogen for agricul-

tural use remains roughly as in recent years—viz., ammonium sulphate, 47-49% of all fertilizer nitrogen; cyanamide, 11-13%; Chilean nitrate, 9-10%; calcium and ammonium nitrate (nitro-chalk forms), 8-9%; calcium nitrate, 7-8%; sodium nitrate (for fertilizer purposes), 3-4%; and other nitrogenous fertilizers, 9-12%.

Tar Products

As regards tar products, 1938 will be remembered for a marked decline in prices of certain distillates, and not less because of the difficulty of their disposal. The advantage of adequate storage accommodation for distillates, to tide over difficult times and fluctuations of prices, need not be stressed. Markets for certain tar products have not increased at a rate comparable with production.

The report of the Falmouth Committee, published in February last, on the coal-oils industry, is an interesting document in this regard. The production of creosote in 1931 was 63 million gallons; last year the provisional figure was given as 90 million gallons. The production of pitch, or road tars containing pitch, must have increased in like proportion. Thus with a declining demand, little wonder that prices fell from 38s. per ton in January to 30s. this month. Creosote in January was realizing as much as 6d. per gallon; to-day it is known that sales have been effected at about 4d. per gallon. It was hoped that the increasing sales of creosote for hydrogenation purposes would have had the effect of arresting such a decline of price, but production has apparently out-paced demand.

On the other hand, those tar products which come within the ambit of the British Hydrocarbon Oils Production Act, 1934, such as crude benzole, motor spirit, 90% benzole, 90% toluole, pure toluole, xylol, and naphthas, maintained steady prices throughout the twelve months. Prices for pyridine declined.

Crude naphthalene prices fell from £5-£6 per ton to about £3 per ton; naphthalene pure crystals from £16 10s./£18 10s. per ton to £11 10s./£13 10s.; and crude whizzed naphthalene from £6 10s./£7 10s. per ton to £4 10s. Judging from information published during the year, world production of naphthalene should have reached 200,000 tons, as contrasted with 140,000 tons in 1929.

Naphthalene is required for such intermediates as beta naphthol, beta naphtylamine, and various substituted derivatives, for phthalic anhydride, and to meet a growing demand for the preparation of chlorinated derivatives, for use as non-inflammable waxes, for di-electric, and other purposes. Plants have been erected for the production of phthalic anhydride by the catalytic vapour phase oxidation of naphthalene. In one process the catalyst chamber is maintained at the desired temperature by a jacket of boiling mercury. Steps to improve the efficiency of these processes have been taken. Yields closely approaching the theoretical are foreshadowed. Research is being directed to the recovery and utilization of the small quantities of by-products, such as maleic acid, unavoidably produced. That prices for naphthalene fell to the extent indicated is rather surprising in view of the increasing demand.

The disposal of pitch constitutes a definite problem. To what extent it can be solved by the production of pitch coke, and by conversion to a pulverized fuel, remains to be seen. Interest has been evinced in the manufacture of pitch coke during the year. The capacity of the Brassert oven at Rainham is 5 tons of pitch per day, and of the Corby installation (now about ready) 40 tons per day. Coal tar pitches vary very widely in coke-burning constituents; the residue remaining with some is 55%, with others 30%. It is said that pitch coke commands a high price—at present about 80s. per ton—and is suitable for the manufacture of electrodes. The specification for this is less than 1% ash, and 1% volatile matter. Some call for less than 0·5% in both cases.

To produce such coke, very high coking temperatures are needed. The heat required under these conditions for 1 lb. of pitch is very similar to that required per pound of coal; although the comparatively lower coke yield would point to a somewhat lower fuel consumption, the very high temperature required counteracts the saving. Actually, as in gas plants, the size and capacity are the dominating factors, the smaller ovens requiring much more heat than the large ones. The duration of the coking operation is approximately twelve hours.

A difficulty in pitch coking is the vicious tendency to boil over, and to circumvent this danger the Brassert ovens use a wide flat floor upon which the pitch is charged gradually for several hours till the resultant coke is 8 to 12 in. high. This has the added advantage that the hydrostatic pressure of the pitch against the oven doors and the brick joints is small.

Little anthracene is recovered, as the fraction between 315° and 370° C. is not large. Above 370° C., chrysene is recovered, and later pyrene. There is no specific market for the resultant pitch oil, which may be mixed with other fractions, or it has to be burned.

The price of carbolic acid (sixties) declined from 4s. per gallon in January to 1s. 6d. in December. Significant in this connexion is the intimation by I.C.I., Ltd., that when coal is hydrogenated, the yield of phenol is greater than when it is carbonized. Typical figures per 100 tons of coal treated are: Hydrogenation, 0·9 ton; distillation, 0·03-0·04 ton, according to temperature of carbonization. The phenol produced at Billingham in 1937 is given as 850 tons. This is said to be well below the present capacity of the plant. It is announced that Rütgerswerke A.-G., of Berlin, have commenced the erection of a synthetic phenol plant.

The production of phenol resinoids and the fabrication of powder from which bakelite products are pressed direct continues to grow. Here again, one can only conclude that production has outstripped demand, or else how can the foregoing reductions of price be explained?

Road Tar

The problem of the tar distiller has always been one of delicately adjusting the treatment of tar to the fluctuating demand of the various products, in which price considerations are largely dominant. Perhaps the use of road tars should be still further developed. Some 600,000 tons per year are applied to roads throughout the country; but Dr. J. A. Roelofsen has pointed out that only 5% of that amount of road tar was so used in Northumberland, Durham, and the North Riding of Yorkshire, while 20% of the total tar is produced within 40 miles of Newcastle. The time has apparently come for a review of British Standard Specifications for tar. There appears to be unanimity of opinion on this aspect.

Readers need not be reminded that the South Metropolitan Gas Company has undertaken much work on thin tar carpets. That tar can maintain its position as an important modern road binder is certain. H. J. Hodsman, of Leeds University, has developed the use of lime for the treatment of road tars

(E.P. 471,216). The underlying idea is to increase viscosity and resistance to flow. But not only is increased viscosity given, due to the presence of insoluble matter, but also plastic, or thixotropic, properties. The latter admits of coal tar being stored, transported, and applied to stone and other materials in ways not possible with normal tar.

The use of polyvinyl compounds in road tars has been covered by E.P.s 478,661 and 478,679. Highly polymerized polyvinyl chloride is preferably employed. It may be added to the tar, heated to 100°-120° C., either in solution—*e.g.*, in anthracene oil—or in powder form. Polyvinyl compounds, other than polyvinyl chloride, are incorporated in tar at a high temperature. Polyvinyl carbazole and polyvinyl acrylic esters are suitable. They may be introduced as such, or in solution, or may be prepared *in situ* in the tar.

The causes of tar-still corrosion have been established by Teddington Research. When tars were chiefly of the horizontal retort type, 12-ton stills had an average life of 16,000 tons throughput. Indeed, 30,000 tons was not uncommon. With 75% vertical and 25% horizontal retort tar the life was equivalent to an average throughput of 7,000 to 8,000 tons. Hitherto it was generally suspected that the decomposition of ammonium salts, such as the chloride and thiocyanate, present in aqueous liquor, was responsible for the corrosion. It has been found, however, that at high temperatures, resinols, or petroleum-insoluble phenols, are very active in promoting corrosion, and in the presence of ammonium chloride the activity is intensified. The more volatile phenols are not corrosive—a fact which is confirmed in industrial practice, where tar acid stills have a very long life.

There is a possibility of developing a technique whereby the resinoid portion of tar may be precipitated, and only the oily fractions of the tar submitted to distillation. Failing such methods, a solution of the problem must be sought in the direction of finding a constructional material which will withstand the action of the corrosive constituents. A series of tests on selected metals and alloys has indicated that nickel-chrome-molybdenum steels are quite unattacked by resinols alone, and only slightly by resinols in the presence of ammonium chloride. Nickel and nickel alloys are also resistant.

Several new tar distillation plants have been erected during the year, most of them of the continuous type and based on flash distillation.

Stocks and Shares

The year has been another unfortunate one for the Stock Exchange. Business has been dominated throughout by political and financial upheavals abroad and the volume at times, according to the seriousness of the event, reduced to a minimum. Both before and after the major crisis in September hardly an Account passed without some serious disturbance taking place outside this country, bringing with it uncertainty regarding the future and a consequent depreciation in the values of securities. Moreover, recent events in Germany have not assisted in lessening this uncertainty, and the political atmosphere will have to become much clearer before business resumes normal proportions.

Stock Markets, therefore, have had a very trying year, and if any satisfactory feature can be noted it is the swift recoveries made after each set-back. Another gratifying feature is that British Funds, except during the crisis week, have remained comparatively steady throughout, and the majority now stand at from two to three points only below their values at the beginning of the year.

It will be remembered that 1937 was a peak year for industry in this country, but judging from some reports and accounts recently received covering operations during a greater part of the present year, it would appear that the unsettled state of world affairs is making inroads into the stability at home.

Under these circumstances it could not be expected that Gas Stocks and Shares would come through the year unscathed, and, in sympathy with the general trend, the market has suffered reverses. Some idea of the losses among "ordinaries" will be seen in the table below. It is satisfactory to note, however, that apart from the two Companies included in the table operating outside this country, the depreciations on the whole are considerably below the heavy falls experienced during 1937—in fact, South Metropolitan stock has actually appreciated in value.

Ordinary Stocks.

	1937. Dec. 31.	1938. Dec. 6.	Rise + Fall −
Alliance and Dublin	158—163	130—140	− 25½
Associated Gas and Water	19/—21/–	17/—19/–	− 2/–
Bournemouth 7%	158—163	157—162	− 1
Brighton 5%	133—138	126—131	− 7
British	139—144	133—138	− 6
Cardiff	125—130	118—123	− 7
Commercial	80—85	78—83	− 2
Croydon sliding scale	140—145	136—141	− 4
Gas Light units	24/6—25/6	22/3—23/3	− 2/3
Liverpool	125½—127½	122—124	− 3½
Newcastle units	23/3—23/9	22/9—23/3	− –/6
Imperial Continental	135—140	108—113	− 27
Portsmouth and Gosport	164—169	157—162	− 7
Sheffield	144—148	140—142	− 5
South Eastern Gas Corporation	23/—25/–	21/—23/–	− 2/–
South Metropolitan	101½—103½	103—106	+ 2
South Suburban	120—125	113—118	− 7
South Western Gas Corporation	18/6—20/6	16/—18/–	− 2/6
Southampton	111—116	105—110	− 6
Tottenham	132—137	125—130	− 7
United Kingdom Gas Corporation	19/6—21/6	17/6—19/6	− 2/–
Wandsworth	140—145	135—140	− 5
Watford	140—145	128—133	− 12

On the other hand, preference and debenture stocks, in common with other high-class investment securities, have remained very steady. Whereas in 1937 falls up to 12 points and over were quite common, the depreciations during 1938, as will be seen below, are almost negligible, while several debenture stocks show appreciations.

Preference and Debenture Stocks.

	1937. Dec. 31.	1938. Dec. 6.	Rise + Fall −
Bournemouth 6% pref.	133—138	130—135	− 3
Commercial 3% deb.	73—78	71—76	− 2
,, 5% deb.	113—118	113—118	—
Croydon 5% deb.	112—117	113—118	+ 1
Gas Light 4% pref.	100—103	98—101	− 2
,, 3% deb.	78—81	78—81	—
Mid-Southern 4% pref.	96—101	95—100	− 1
Newcastle 4% pref.	98—100	99—100	+ ½
,, 3½% deb.	90½—91½	88½—89½	− 2
Severn Valley 4½% cum. pref.	19/6—21/6	19/6—21/6	—
South Eastern 4½% red. cum. pref.	20/—22/–	19/—21/–	− 1/–
South Metropolitan 6% pref.	131—136	128—133	− 3
,, ,, 4% pref.	98—101	95—100	− 2
,, ,, 3% deb.	74—79	75—80	+ 1
South Suburban 5% pref.	110—115	108—113	− 2
,, ,, 4% pref.	95—100	95—100	—
,, ,, 5% deb.	113—118	113—118	—
Tottenham 5½% pref.	121—126	116—121	− 5
,, 4% deb.	97—102	95—100	− 2
United Kingdom 4½% 1st cum. pref.	20/—22/–	19/—21/–	− 1/–
Wandsworth 4% pref.	99—102	95—100	− 3
,, 5% deb.	113—118	115—120	+ 2
,, 4% deb.	97—102	95—100	− 2

It has been mentioned above that the depreciations in gas stocks during the current year have occurred for no other reason than sympathy with markets in general. It must always be remembered, however, that "gas" as an investment receives scant publicity, and also many stocks are closely held and seldom come into the market. Quotations, there-

fore, in these cases, whatever the outside influences, remain unchanged for months at a time.

Interim dividends with one or two exceptions have been maintained and the results for the full year will be awaited with interest. It has certainly been a difficult year for gas administrators. Two long periods of unseasonable weather, in March and November, coupled with, in some cases, a full year's coal bill at the higher rates, will probably make inroads into profits, though these extra costs will doubtless be met by economies brought about by good management and the balance by small increases in gas prices.

Obituary

Each year inevitably witnesses the passing of distinguished men, and no retrospect of 1938 would be complete without brief reference to some eminent names whose memory will remain as outstanding examples of a lifetime of service devoted to furthering the interests of the Industry in one direction or another.

In the passing of R. W. EDWARDS on Jan. 15 the Industry lost a tireless and conscientious worker. He will long be remembered for his close identity with the Gas Companies' Protection Association, of which he was Chairman at the time of his death. He was also Chairman and Managing Director of the Mid-Southern Utility Company, which made enormous progress under his guidance, and on three successive occasions he was Mayor of Aldershot. The sudden death on March 25 of JOHN R. HEPPLE robbed the North-East Coast of an able worker for the Industry and wider circles of a public lighting expert; he was in the service of the Newcastle-upon-Tyne and Gateshead Gas Company. A Past-President of the Wales and Monmouthshire Association of Gas Engineers and Managers, J. E. KENSHOLE, Managing Director of the Merthyr Tydfil Gas Company, died on May 1.

The services of Dr. J. W. MELLOR, who died late in May, on behalf of the ceramic industry have reacted extremely well on the Gas Industry and others using refractories. His association with the Industry dated from 1908—a time when data on the properties of fireclay and refractory materials generally were very scanty. With the support of the Industry he did much to remedy those deficiencies. He retired from the position of Director of Research to the British Refractories Research Association in 1937. His services to science earned him the award of C.B.E. in the Coronation Honours. A shadow was cast over the last days of Institution Week by the very sudden death on June 3 of ROBERT GRAY. He went north as recently as March with every expectation of a long career as Chief Engineer of the Newcastle Company.

An old friend passed away on June 11 in the person of W. E. PRICE, who retired after twenty-three years' tenure of the Honorary Secretaryship of the Institution in June, 1936. It was typical of the man that he should have asked that the presentation from the members to mark his retirement should take the form of a special donation to the Benevolent Fund. He was always jealous of the dignity of the Institution throughout a term of office covering one of the most fruitful and eventful periods in the history of the Industry. He participated to the full in almost every activity of the Institution and the Industry during that period, and took a leading part in the work which culminated in the granting of the Charter to the Institution.

The Gas Industry lost another old friend and valuable research worker by the death of Professor WILLIAM A. BONE, also on June 11. One of his outstanding contributions to the Gas Industry was his William Young Memorial Lecture, entitled "Half-a-Century of Combustion Research," which he read before the North British Association in 1935. In 1910 he was selected as the first occupant of the Livesey Chair of Coal Gas and Fuel Industries at Leeds University.

The Industry in Yorkshire suffered a severe loss on June 21 by the death of EDWIN H. HUDSON, Chairman of the Normanton Gas Company, and a man of conspicuous ability and charming personality, whose services were universally recognised and appreciated. A week later the death occurred of JOHN BOND, who was President of the Institution in 1915, and Engineer and Manager of the Southport Gas Department until his retirement in 1934. He was an exceedingly sound technician, particularly on the chemistry side, and contributed freely of his time and knowledge to the many problems of his day and particularly to research.

One of the Industry's most outstanding figures of all time, Dr. CHARLES CLAUDE CARPENTER, C.B.E., passed away on Sept. 7. Though the affliction of severe illness had fallen upon him some considerable time before, the knowledge that all was not well with him did nothing to lessen the feeling of regret throughout the Industry at the passing of one of its foremost engineers and a great administrator. He left his mark upon so many aspects of the Industry as to carve his name indelibly upon the tablets of its history and to gain the lasting gratitude of his colleagues. In considering his many claims upon the gratitude of the Industry one is inclined to place first his unceasing active support of the principle of co-partnership.

A past-President of the B.C.G.A. and prominent industrialist, JOHN E. COWEN, Chairman of the Newcastle-upon-Tyne and Gateshead Company, died on Dec. 2. Under his leadership the Company considerably developed its interests, taking over the Walker and Wallsend, Tynemouth, Chester-le-Street, and other undertakings, and culminating at the beginning of this year with the acquisition of South Shields. The death occurred on Dec. 4 of WILLIAM LYLE GALBRAITH, who retired early last year from the Secretaryship of the Gas Light and Coke Company after twenty years' service, during which he gained the affection and esteem not only of his colleagues in the Company, but a wide circle in the Industry.

It was with the deepest regret that his many friends in the Industry learnt of the death of OCTAVIUS THOMAS on Dec. 11. He had been Secretary of the Wales Association since its inception in 1905, even while acting as President. For thirty-six years Engineer and Manager of the Rhondda Gas and Water Department, he was universally beloved and respected for his sincerity and unstinted service and loyalty.

Personal

On Dec. 14 an interesting and, perhaps, unique, presentation took place to mark the retirement of Mr. H. KEENE from his position of District Superintendent with the Bournemouth Gas and Water Company.

At the Grand Hotel, Bournemouth, a luncheon was arranged by twenty-one representatives who had called on Mr. Keene regularly for a long period of years and who had subscribed together to make a presentation to him consisting of a silver cigarette box, which had been made specially by a Birmingham jeweller. Mr. Keene is a very enthusiastic yachtsman and the box was appropriately embellished on the outside with his Yacht Club racing colours and the name of the yacht "Gone Away." The inside lid of the box was suitably inscribed and bore the facsimile signatures of the twenty-one representatives responsible for the gift.

The luncheon was presided over by Mr. J. H. Kemp. Mr. P. G. G. Moon, Engineer and General Manager of the Bournemouth Company, was also present as a guest, together with six of his Chief Officials. Mr. Kemp, as Chairman, made a very witty speech prior to making the presentation, and this was responded to, amid much enthusiasm, by Mr. Keene. Mr. Moon also spoke, expressing his pleasure at being present and paying high tribute to Mr. Keene's sterling and loyal work for the Company.

* * *

Mr. ROBERT HENDERSON, of St. Andrews, has been appointed Assistant Manager to the Cowdenbeath Gas Company, Ltd., and takes up his new duties on Jan. 2, 1939.

* * *

Mr. ANDREW MITCHELL, Assistant Manager of the Cowdenbeath Gas Company, Ltd., has been appointed Manager of the Penicuik and District Gas Company, Ltd., and takes up duties on Jan. 1, 1939. Mr. Mitchell was only appointed to Cowdenbeath some six months ago, going there from Dunfermline, where he received his technical training. He holds the Diploma of The Institution of Gas Engineers in Engineering.

South Metropolitan Gas Company

Two-Part Tariff Adopted

The South Metropolitan Gas Company has introduced, for ordinary and slot consumers, an optional two-part tariff as an alternative to the flat rate. It consists of a fixed periodic standing charge, based on the rateable value and size of premises, and a commodity charge for all gas consumed of 4·7d. a therm, or half the current flat rate.

The standing charge is payable in advance, normally at quarterly or half-quarterly intervals, but arrangements have been made with the London County Council and some other large landlords for the collection of the standing charge with the weekly rent. In the case of slot consumers the standing charge is made to include the hire of normal slot equipment.

The aim of this new option is to encourage the enjoyment of a complete labour-free and smokeless fuel service at a cost within the means of the Company's consumers as a whole.

Institution of Gas Engineers

Members are informed that copies of the Proceedings of the Seventh International Management Congress held in Washington in September, 1938, may now be obtained at a cost of 26s. per set of seven volumes. This price of 26s. is subject to fluctuations in the £1 rate. Copies may also be obtained of a Report prepared for the British Management Council by Lyndall Urwick on the "Development of Scientific Management in Great Britain" at a cost of 1s. per copy. Orders for either of these Publications may be sent to the Secretary, British Management Council, Room 66, Armour House, St. Martins-le-Grand, E.C. 1, or to the Secretary of the Institution.

* * *

Arrangements have now been made, after consultation with the Factory Department of the Home Office, to issue for the use of gas undertakings a Gasholder Record Sheet complying with the requirements of Section 33 (2) of the Factories Act, 1937, as interpreted by the Home Office in Statutory Rules and Orders, 1938, No. 598.

The Sheet (Reference IGE/WSG/8/1) is uniform in size and lay-out with the previous Gasholder Record Sheets of the Institution, and copies can now be obtained from the Secretary, 1, Grosvenor Place, London, S.W. 1, at the same rates—namely: Quantities of 1 up to 49, 2½d. per sheet; quantities of 50 up to 99 2d. per sheet; quantities of 100 and upwards, 1½d. per sheet.

The new Sheet does not replace the previous Record Sheets of the Institution, which contain much information necessary to the management of a gas undertaking but not contained in the record prescribed by the Home Office and set out in the new Sheet.

Forthcoming Engagements

1939.

January.

7.—London and Southern Juniors.—Visit to Wandsworth Gas-Works.
7.—Scottish Eastern Juniors.—Short Paper Meeting at Dunfermline.
9.—L.C.C.A.—Technical Committee, Gas Industry House, 2.30 p.m.
12.—Midland Juniors.—Lecture by A. T. Green, F.I.C., of the British Refractory Research Association.
14.—Scottish Western Juniors.—Visit to Maxol Heaters, Ltd., Manchester.
14.—Yorkshire Juniors.—Paper by H. A. Fells, of Sheffield.
16.—W.G.C.—Training Committee, 11 a.m.; Executive Committee, 2.30 p.m.; Summer School Committee, 4.30 p.m.; London and Home Counties Demonstrators' Circle, 7 p.m.
17.—London and Southern Juniors.—Meeting at Kennington. Paper by G. S. J. Knott on "Meters and Standards."
19.—L.C.C.A.—At Gas Industry House. Finance Committee, 10.45 a.m.; Executive Committee, 11.15 a.m.; Central Committee, 2.30 p.m.
19.—S.B.G.I.—Council Meeting, 2.30 p.m.
20.—S.A.G.E.M. (Western District).—Commercial Meeting, Rougemont Hotel, Exeter, 2.30 p.m.
21.—Wales and Monmouthshire Juniors.—Meeting at Newport.
21.—Western Juniors.—Visit to Cheltenham. Paper by Leopold Friedman, of Ascot Gas Water Heaters, Ltd.
28.—Scottish Western Juniors.—Visit to Parkinson & Cowan, Ltd., Glasgow.
31.—I.G.E.—Joint Committee on Complete Gasification under Pressure, Department of Scientific an Industrial Research Offices, 16, Old Queen Street, S.W. 1, 3 p.m.

February.

1.—London and Southern Juniors.—Visit to Cricklewood Works of British Oxygen Company.
1.—Manchester and District Juniors.—Visit to Staveley Coal and Iron Company, Ltd., Chesterfield.
2.—Midland Juniors.—Paper by F. A. Reynolds, "Some of the Uses for Gas at Wolverhampton."
4.—Scottish Eastern Juniors.—Visit to Messrs. William Dixon's Coke Oven Plant, Govan Ironworks.
11.—Scottish Western Juniors.—Paper by D. Beavis, of Helensburgh, on "The Modern Domestic Field."
14.—London and Southern Juniors.—Paper by A. Ronca on the 1937 Factory Act (at the H.O. Industrial Museum).
17.—B.C.G.A.—Gas Industry House. Executive Committee, 11.30 a.m.; General Committee, 2.30 p.m.
18.—Scottish Western Juniors.—Annual Whist Drive and Dance.
23.—Joint Junior Visit to B.I.F.

Joint Gas Conference at B.I.F.

The Joint Gas Conference of the B.G.F. is to be held on Tuesday, Wednesday, and Thursday, Feb. 28 and March 1 and 2, 1939, at the British Industries Fair, Birmingham.

The Programme of the Conference is in course of preparation and will be circulated as soon as possible, but the following is a brief outline of the probable proceedings:

Tuesday, Feb. 28.

11.15 a.m. Assembly.
11.30 a.m. Official Welcome. Presidential Address.
1.0 p.m. Official Luncheon.
2.45 p.m. Display of Gas Industry Publicity Films.

Wednesday, March 1.

10.15 a.m. Assembly.
10.30 a.m. Series of short Papers on "The Domestic Load, Its Retention and Development," followed by Discussion.
1.0 p.m. Luncheon at invitation of the Fair Management Committee.
2.45 p.m. Display of Gas Industry Publicity Films.

Thursday, March 2.

Morning: Inspection of Exhibits.
Afternoon: Display of Gas Industry Publicity Films.

Members intending to be present at the Conference are strongly advised to apply *immediately* to the Accommodation Department of the British Industries Fair, Chamber of Commerce, New Street, Birmingham, stating what accommodation is required and whether a boarding house would be acceptable if hotel accommodation cannot be secured. It is important that as early application as possible should be made.

News of the Week

The Next Commercial Meeting of the Southern Association of Gas Engineers and Managers (Western District) will be held at the Rougemont Hotel, Exeter, on Jan. 20, at 2.30 p.m.

The Price of Gas in the area of the Gas Light and Coke Company is to be increased by ¼d. a therm on meter readings after March 1. The increase is due to substantial increases in the price of coal.

New Figures were set up at the Perth Corporation Gas-Works on Dec. 21, when 1,758,000 cu.ft. of gas was supplied. During the week 718 tons of coal were carbonized to produce 10,618,000 cu.ft.

The Employees of the Aberdeen Corporation Gas Department have allocated from their Charitable Institutions Fund the sum of £106. This includes a contribution of £55 to the Aberdeen Royal Infirmary.

A Record Consumption of Gas was established last week by the Edinburgh Gas Department, when 17,236,000 cu.ft. were sent out. This represented an increase of almost three-quarters of a million cu.ft. over the record established last December.

A New Gasholder at Birkenhead is to be erected by Messrs. Ashmore, Benson, Pease, & Co., Ltd., who have received instructions from the Birkenhead Corporation Gas Department to proceed with the work. The holder will have four spirally-guided lifts and a capacity of 3 million cu.ft. The tank will be of steel, supported on reinforced concrete foundations and Franki piling.

The 31st Paris International Trade Fair will be held from May 13 to 29, 1939. In comparison with the corresponding period of last year, the number of exhibitors up to date shows an increase of 10%. Provision for this had, however, already been made as indications of heavy bookings for 1939 were apparent before the close of the last Fair. For all information, application should be made to Foire de Paris, 17, Tothill Street, London, S.W. 1.

At a Meeting of the Filey Urban District Council held on Dec. 21, 1938, it was resolved that from Jan. 1, 1939, the gas charges operating throughout the district will be reduced by 2d. per 1,000 cu.ft. The new charges will be as follows: Gas supplied through prepayment meter: 4s. 2d. per 1,000 cu.ft., less 4% discount = 4s. net (9·6d. per therm). Gas supplied through ordinary meter: 3s. 8d. per 1,000 cu.ft. (8·8d. per therm net). Subject to present scale of discounts for large consumptions.

A Record Day's Output in the history of the Gas Light and Coke Company was attained during the twenty-four hours which ended at 6 a.m. on Wednesday, Dec. 21. In that day the twelve works of the Company sent out 265,000,000 cu.ft. of gas. On Dec. 11, when the average temperature was 54°, the day's make of gas was 150 million cu.ft. When the temperature fell on Dec. 12 by 1° the day's make leapt to 174 million cu.ft., rising to 192 million cu.ft. on Dec. 18 when the temperature fell further to 29° and to over 250 million cu.ft. on Dec. 19 with a further fall of 2°. The total output for the five days, Dec. 19-23, was 1,300 million cu.ft.—a record in the history of the Company and an increase of 400 millions on the corresponding period of the previous week.

We Are Informed by the "Russia To-day" Press Service that a big experimental station for the underground gasification of coal which is being built in the vicinity of Tula, not far from Moscow, is expected to be finished by the end of December next. The new station will, it is stated, play a big part in the underground gasification of coal. Experiments in the underground gasification of coal were first embarked upon in the Soviet Union eight years ago and two years later was formed the Underground Gasification Trust, known as Podzemgaz. There are now several underground gasification stations which, during the course of 1938, have gasified some tens of thousands of tons of coal. The industry, now employing some 1,500 workers, engineers, and technicians, may be said to be leaving the experimental stage and to be entering the stage of industrial exploitation. In addition to the station now in course of construction near Tula, it is intended to sink another big station in the Moscow Basin for industrial exploitation.

Following the Lead of the Liverpool Gas Company, the Bristol Gas Company have chosen the name of Radiant House for their Chief Offices and Showrooms.

On the Recommendation of the Gas Committee the Oldbury Town Council have decided to increase the price of gas to industrial consumers by 3d. per 1,000 cu.ft., and by 1d. per 1,000 cu.ft. in the case of domestic consumers. The revised charges it is estimated will bring in an increased revenue of £516 from prepayment meters, £725 from the ordinary meters, £2,675 from industrial consumers, and £125 in respect of public lighting.

Hiring of Appliances from the Burnley Gas and Electricity Department is to be restricted from Jan. 1 to hire purchase on a quarterly basis. After consideration of reports by the Town Clerk, the Electrical Engineer, and the Gas Engineer, on the provisions of the Hire Purchase Act, it was decided that the period for the payment of instalments on appliances let on hire purchase by both Departments be from one to seven years, save that in special cases to be decided by the Borough Treasurer and the Gas Engineer in connexion with gas appliances, the period be extended to ten years. Consideration of the position with relation to the Electricity Department's assisted wiring scheme has been deferred pending a further report by the Town Clerk.

The Twenty-Ninth Annual Exhibition of scientific instruments and apparatus, arranged by the Physical Society, will be held at the Imperial College of Science and Technology, Imperial Institute Road, South Kensington, S.W. 7, as follows: Tuesday, Jan. 3, 1939, from 2.30 p.m. to 9 p.m.; Jan. 4, from 4 p.m. to 9 p.m.; and Jan. 5, from 2.30 p.m. to 9 p.m. The leading manufacturers of scientific instruments will be exhibiting their latest products in the Trade Section. The Research and Educational Section will contain contributions from research laboratories, and experiments of educational interest. In addition the work submitted for the Craftsmanship and Draughtsmanship Competition by apprentices and learners will be on view. Discourses will be delivered on two days at 7.45 p.m. as follows: Jan. 3, Dr. J. D. Cockcroft, M.A., M.Sc., F.Inst.P., F.R.S., "The Cyclotron and its Applications," and on Jan. 4, Mr. C. S. Wright, C.B., O.B.E., M.A., "Geophysical Research in Polar Regions." Admission to the Exhibition is by ticket only. Members of Institutions and Scientific Societies may obtain tickets from their Secretaries; tickets may also be obtained from the Exhibition Secretary, 1, Lowther Gardens, S.W. 7.

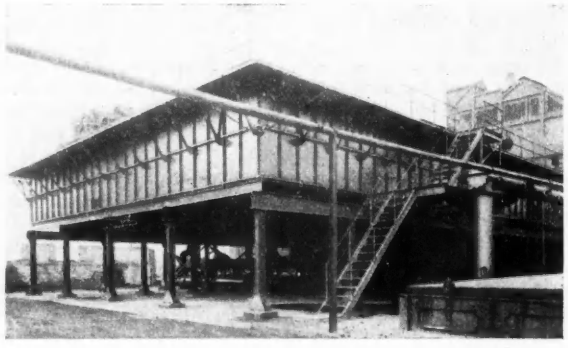
Duchess of Gloucester Inspects Gas Cooker

This "New World" Regulo-controlled gas range is installed in an invalid kitchen at Lambeth. The Duchess of Gloucester is seen making her annual visit of inspection. Her Royal Highness is the President, and greatly interests herself in this and other charities.

INCREASING OUTPUT NECESSITATES

New Purification Plant at Dudley

New purification plant, capable of dealing with 4 million cu.ft. of gas per day, has just been completed and put into operation at the Dudley works of the Dudley, Brierley Hill, and District Gas Company. In fact, Mr. F. C. Briggs, Engineer and Managing Director of the Company, informs us that owing to the rapid increase in the output of gas, which has amounted to approximately 40% in the last five years, extensions to the works and plant have been almost continuous during that period.



View from Ground.

THE previous purification plant consisted of two sets of four boxes each, arranged for rotation in series, with one catch box to each set, the total capacity of all ten purifiers being 2 million cu.ft. of gas per day. The new purifiers consist of four cast-iron boxes, each 30 ft. by 40 ft. by 8 ft. 6 in. deep, supported on steel columns and girders, giving a clearance of 9 ft. above ground level, and arranged in the form of a rectangle approximately 60 ft. by 80 ft. Provision has also been made for the future addition of another box, with the erection of which the completed set of purifiers will consist of five boxes, all capable of being rotated in series; and no catch boxes, in the usually accepted sense, will then be used.

Special consideration had to be given to the design of the connecting mains between the boxes because, owing to the limited space available, the more usual method of using ring mains with boxes arranged in a square could not be adopted. The main inlet and outlet pipes are thus laid parallel to each other and on either side of the centre line of the set. All the mains and inter-box connexions are 24 in. diameter, and they, together with the gas pre-heaters, control valves, seal pots, and syphons, have been conveniently accommodated over a ground area of 26 ft. 4 in. by 60 ft.

Two of the new boxes occupy the site of a previous motor garage, and the other two that of two old wet lute purifiers, and since, owing to the small purifier capacity, the old boxes could not be shut down until the last possible moment, the foundations for the new boxes were laid in two stages. Thus, demolition of the motor lorry garage was the first step, and the erection of the two purifiers on that site was well in hand before the old boxes were shut down and the rest of the foundations prepared. Actually, demolition of the garage started on Jan. 14, 1938, and was completed by Feb. 1. Excavation began forthwith and was completed in eight days, 6,000 cu.ft. of concrete and tar macadam roadway being broken up and removed in that time.

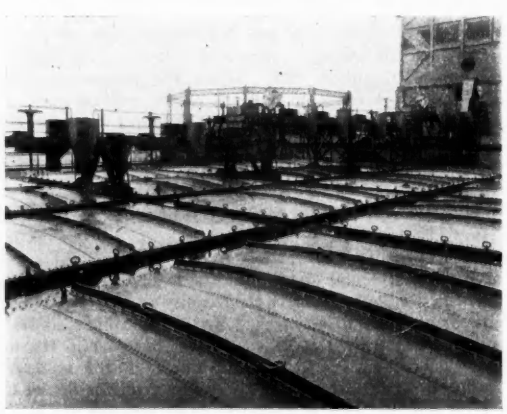
Foundations.

The foundations for the first two purifiers consisted of a reinforced concrete raft 90 ft. by 35ft. by 2 ft. thick, which was completed in 17 days, when approximately 450 tons of concrete and 70 tons of steel were laid. A short time was then allowed for the concrete to harden before commencing on the erection of the first two boxes.

In the meantime, preparations had to be made for dismantling the two existing boxes. First of all a number of alterations to connecting mains between the existing purifiers were carried out by the Gas Company's employees so that a set of four carburetted water gas purifiers coulo be brought into use for coal gas purification and the existing coal gas purifiers could be used as two series of four boxes each. Thus, when the two old boxes were shut down, the unpurified coal gas was divided into three streams and passed through three sets of four boxes each. These alterations to mains were completed by April 30, and the old boxes were then shut down, emptied, demolished, and an overhead gantry crane was dismantled, within twelve days from that date.

The concrete foundations for the second pair of new boxes consisted partly of two reinforced concrete rafts, one above the other and with rather more than 2 ft. of sand-filling between, and partly of a single raft 2 ft. thick Of the double rafts the upper one is 6 ft. thick and the lower one 9 ft., while column loads are transmitted to the lower one by reinforced concrete piers between the two. The unusual design of these foundations was necessitated first by differences in levels of the site, and, secondly, because some of the ground was consolidated and the rest "made up" material. Special provisions had to be made for tying in the various portions of the foundations to each other and to those previously laid. The foundations for the second pair of boxes involved the placing of approximately 335 tons of concrete, 70 tons of steel, and 190 tons of sand-filling, and were completed in 18 days.

The accompanying photographs give some idea of the extent of the scheme. The purifiers themselves are 8 ft. 6 in. deep and contain two layers of oxide each 3 ft. deep. The principle of divided flow is employed, and by this method the gas may enter the box in the space between the two layers of oxide and leave from the top and bottom of the box, after passing upwards and downwards through each layer. Alternatively, it may enter at the top and bottom of the box simultaneously and be removed at the centre. Special Westwood & Wrights reversing flow valves are used for controlling the direction of flow through the boxes, while standard Westwood & Wrights valves are used throughout on the connecting mains. With divided flow it is probable that the purifier capacity on the ground space available is greater than would have been the case if two or more shallower layers of oxide had been employed and the gas passed in series through them. It is also anticipated that trouble from back-pressure will be considerably reduced. Humidity and temperature control of the gas is obtained by the use of preheaters and live steam connexions on the inlets of all boxes.



View of Oxide-Handling Plant from Top of New Purifiers.

Oxide Handling.

The oxide handling plant is capable of dealing with 20 tons of oxide per hour, and consists of four separate units, namely:

(1) A portable conveyor at ground level on to which oxide can be shovelled off the floor of the revivifying shed and fed into the boot of a portable vertical elevator.

(2) A composite portable unit consisting of the previously mentioned vertical belt bucket elevator and a belt conveyor. This unit travels on rails carried on the deck plates of a previously existing set of four purifiers.

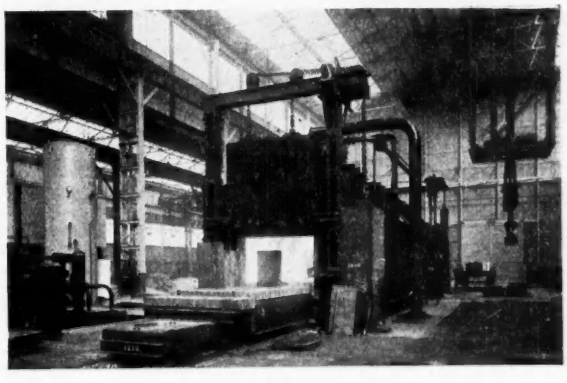
(3) and (4). Two portable belt conveyor units each traversing two of the four new purifiers.

The vertical elevator, which is fed by the ground level conveyor, discharges on to the first high-level conveyor. This, in turn, may deliver the oxide by means of suitably arranged shoots into any one of the boxes over which it travels or on to the second conveyor. Again this may feed either into other purifiers, or on to the third conveyor, which finally delivers into the last two new purifiers. The oxide is removed from the belt conveyors by means of ploughs, and the positions of the shoots are such that any particular box can be filled with one alteration only of the position of the elevators and conveyors. Each part of the plant has its own electric motor drive, so that the minimum amount of plant is in use at any time. The purifier covers are also handled by this plant and are picked up by means of hooks on the end of screwed shafts which may be raised or lowered by handwheels on the conveyor platforms. Simultaneously with the erection of the new purifiers a new electricity generating house has been built. The supply of electricity is provided by two duplicate 20 kW Belliss & Morcom Metro-Vick steam driven generating sets, and is used for the motors of the oxide handling plant as well as other works purposes.

The whole purifier installation was completed and put in commission on Oct. 8, by which time the work done had involved, in addition to the laying of the foundations, the erection of 275 tons of cast-iron and steel material, together with machinery for the handling plant, and the handling of over 700 tons of oxide for filling the boxes.

The contractors for the purifiers were Messrs. Westwood & Wrights, Ltd., of Brierley Hill and Dudley, and for the foundations Messrs. Thomas Vale & Sons, Ltd., of Stourport, and only by careful planning and close co-operation between the Gas Company and the contractors were the various difficulties overcome and the work completed in the short time available.

New Gas Furnaces at Chesterfield Take 300 Million Cu.Ft. per Annum



The Pre-Heating Furnace.

Our readers will doubtless have read of the recent inauguration at the Works of the Chesterfield Tube Company, Ltd., of a new department for the production of weldless steel cylinders and tubes. We had the opportunity the other day of inspecting the new plant, which is believed to be of a size and power exceeding any other of a similar kind operating in the world.

WHILE the actual products are not of a kind utilized to any great extent in the Gas Industry, the plant is of interest in that it incorporates a series of large gas-fired furnaces, the fuel for which is supplied by the Chesterfield Corporation Gas Department, whose Engineer and Manager, Mr. H. Davies, has made special provision for meeting this exceptional demand. As a result, the new heavy tube shop is entirely smokeless and is, needless to say, in marked contrast to many other plants whose belching chimneys are by no means an attractive feature of this important industrial centre. From this aspect alone, therefore, the new department may be regarded as a definite amenity to the district.

Before referring to the gas furnaces and the provisions which have been made to supply their fuel, it may be of interest to mention briefly the type of work which is carried out in this magnificent new shop. To give an idea of its magnitude, it may be stated that it is a structural steel building of two parallel bays —one 660 ft. long by 100 ft. wide by 60 ft. high, and the other 615 ft. long by 50 ft. wide by 33 ft. 6 in. high to the eaves. The covered floor space is nearly 100,000 sq.ft. About 2,000 tons of structural steel were used, and there is an area of over 55,000 sq.ft. of glazing. Owing to the considerable size and weight of the principal units of plant, extensive excavations and foundations were necessary, reaching in some cases to a depth of 45 ft. below the floor level.

The plant consists of a vertical hydraulic triple-cylinder billet-piercing press of a power to operate on a billet or ingot having a weight of 20 tons. Auxiliary hydraulic cylinders are fitted for moving the container from under the press and ejecting the pierced bloom. The press, which has a total weight of 850 tons, is capable of producing in one operation a hollow forging 9 ft. in length. There is also a horizontal hydraulic tube draw bench of the triple-cylinder type; this has a maximum stroke of 40 ft., and hollow blooms of approximately 20 tons can be mandrel drawn. This draw bench has an overall length of 146 ft. and weighs over 500 tons.

The hydraulic equipment for the piercing press and draw bench consists of three pumps, each driven by a 6,600-volt three-phase synchronous motor of 600 h.p. The accumulator is of the air-hydraulic type, comprising air and water receivers. The pumps are arranged to run continuously when the plant is working, electrically-operated valves controlling the supply of pressure water to the accumulator according to the demands of the plant.

The work is handled by overhead cranes, which include one of 50 tons fitted with duplex hoists, one of 20 tons (guided type), one 20-ton general purpose crane, and one of 12 tons with two separate 6-ton crabs. With little exception, the plant and equipment is of British manufacture, and now renders the country no longer dependent upon foreign sources for the production of heavy calibre pierced and drawn steel hollows; at the same time it extends the country's facilities for competing in the world's markets.

The Gas Furnaces.

The new plant has been designed for the manufacture of weldless steel tubular products having a maximum external diameter of 54 in. and an approximate finished weight of 16 tons. The maximum length of hollow that can be drawn is 35 ft.; but in practice this length will vary according to the wall thickness required in the finished product and the minimum wall thickness which is practicable in the manufacture of hollows of this unprecedented size and weight.

It will therefore be appreciated that furnaces of considerable dimensions were required for dealing with products of this size. Previous experience of the suitability of gas furnaces for the manufacture of similar, though smaller, products in their other departments led the Chesterfield Tube Company to choose gas for their new plant, which had the effect of doubling their consumption from the Chesterfield Gas Department.

There are three gas furnaces; in the new department—a pre-heating furnace, a soaking-pit furnace, and a re-heating furnace. The first is a bogie tunnel furnace in which ingots of varying sizes and weights up to 20 tons can be pre-heated. This furnace is divided into two sections—pre-heating and soaking. The soaking zone is of the cross-fired multiple-pass regenerative type capable of heating small and medium size ingots to final temperature for

piercing. It has a temperature range up to 1,300° C., and the normal gas consumption is of the order of 18,000 cu.ft. per hour, with a maximum of 24,000 cu.ft. The internal dimensions are 60 ft. long by 7 ft. by 7 ft., half the length only being under fire.

The soaking-pit furnace is built below floor level and is of the multiple-pass reversible regenerative type designed for a maximum working temperature of 1,300° at a consumption of 18,000 cu.ft. per hour. This furnace is 20 ft. long by 6 ft. 9 in. wide by 8 ft. high (internal dimensions). It has been found that two separate furnaces are better than one graded furnace on account of slagging troubles, while when dealing with nickel-chrome steel it is necessary to have a low temperature at the charging end; for this purpose it is possible to keep the charging and of the preheating furnace as low as 150°—which would not be easy in a continuous furnace.

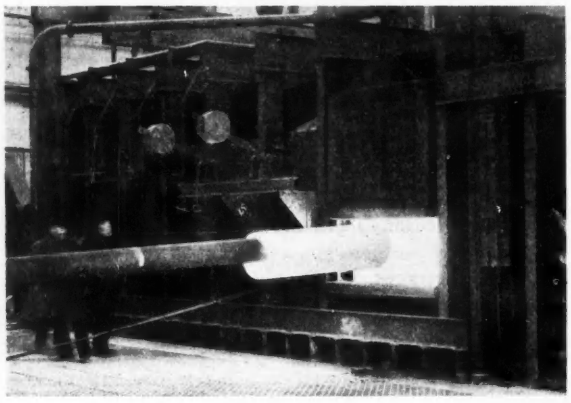
The tube re-heating furnace is of the continuous recuperative type with inclined hearth and measures 18 ft. wide by 28 ft. 9 in. long, accommodating forgings up to about 4 ft. in diameter. By reason of the considerable span, the roof is suspended, which also allows of easy replacement of bricks. This furnace is designed to give uniformity of temperature up to 1,200° throughout the full length of the tubes, with minimum scale formation. It is also used for controlled cooling of nickel-chrome products, which may take as long as two days to reduce from 700°. The main burners are at the end, with auxiliary burners at the sides for equalizing when the furnace is used for heat treatment purposes.

All three furnaces are fitted with Bryan-Donkin governors set to give 6 in. pressure and all work on natural draught. Fans are employed to exhaust the spent products, dilution dampers being provided to safeguard the fans against excessive heat; an alarm bell calls attention to the safety limit, indicating that it is time either to reverse the furnace or open the dilution dampers. All three furnaces were built by Priest Furnaces, Ltd., of Middlesbrough, and are fully equipped with indicating, recording, and integrating meters.

The Gas Supply.

The new furnaces are estimated to require some 300 million cu.ft. per annum, bringing the total hourly requirements of the Tube Works, including their original gas furnaces, up to 120,000 cu.ft. This represents an increased consumption which very few gas undertakings—glad as they might be to have it—could provide without some embarrassment. The Chesterfield Gas Department, however, were in the fortunate position of being able to take considerable quantities of gas from neighbouring coke ovens. Even so, although the coke ovens were in a position to provide this output of gas to meet the greater demand, the existing mains were quite inadequate to cope with so greatly augmented a load. Special provisions had, therefore, to be made.

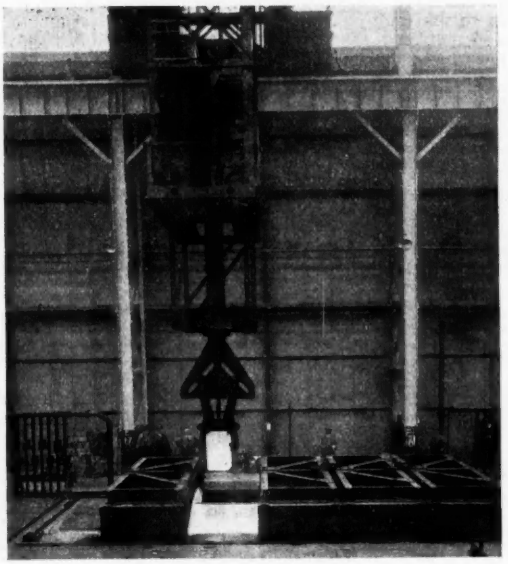
The two coke ovens from which supplies are obtained under



The Re-Heating Furnace.

contract are the Grassmoor Company, Ltd., and the Hardwick By-Product Company, Ltd. At the former, gas is purified, measured, and delivered through compressors into a 12-in. steel main, which runs for a distance of about three-quarters of a mile before being joined by the main from the Hardwick Company. At the latter works the gas is delivered unpurified; but as the Gas Department desired to supply clean gas to the Tube Works *en route* to the gas-works, it was necessary to put down purifiers at the coke ovens, these being maintained by the Gas Department. Here again, gas is now delivered through compressors into a 12-in. steel main which joins that from the Grassmoor Company after two miles.

These united supplies continue in a 12-in. main to the gas-works. Half a mile from the gas-works this main is tapped and a branch taken to the Tube Works, where the gas passes through a Vokes filter and is measured by three Connersville meters. These are of varying capacities and can be used individually or all together according to the demands of the furnaces. The Vokes filter works very efficiently and throws only 1½ in. back pressure on full load; it is, moreover, easily cleaned when necessary. A similar filter is used in conjunction with the Connersville meter at the gas-works.



The Soaking-Pit Furnace.

The pressure in the coke oven main is controlled by a governor fixed at the gas-works at the outlet of the main and connected to the inlet of the gasholders. This governor is surmounted by a non-return valve which enables the gasholders to feed back into the coke oven main when the demands of the Tube Works exceeds the output of the coke ovens. With so large—and varying—a load, it is necessary for the Tube Works to advise the Gas Department of their requirements, both in total daily volume and estimated hourly loads. When the coke oven supply exceeds the requirements of the Tube Works, the gas passes, of course, into the gas-works storage. Recording flow meters, C.V., and pressure charts are maintained at the gas-works showing the demands of the Tube Works, and it is surprising to see the effect which the shutting down of even one of the large gas furnaces has on the works flow chart.

The coke oven gas passing into works storage normally goes through a catch box and "Dri-Gas" plant before entering the holders.

The Chesterfield Gas Department are to be congratulated on the provisions they have made for this enormous load and the satisfactory manner in which they have been able to satisfy the requirements of the new department at the Tube Works—showing once again the versatility of gas and its pre-eminence for large-scale industrial work.

British Vacuum Cleaner Progress

Another highly satisfactory year has been experienced by the British Vacuum Cleaner and Engineering Company. The net profit of £77,513 for the year ended Sept. 30 compares with £77,282, and is better than it looks, because, first, it has been made in a period when the Company's operations were for a time dislocated by removal of the works to the new factory at Leatherhead; secondly, the expenses incidental to removal were borne as part of the year's expenses; and, thirdly, the profits made by the Canadian subsidiary have not been brought into the parent company's accounts. Even so the earnings as shown are equal, after charging income-tax, to nearly double the 40% dividend which is again recommended on the Ordinary shares. To provide fresh funds the Board intend to make an issue of additional Ordinary shares to the Ordinary shareholders; the terms will be disclosed at the annual meeting to be held on Dec. 30.

Benham's Successful Year

The annual meeting of Benham & Sons, Ltd., was held on Dec. 20 at the Company's office. In the course of his address, Mr. Stanley J. Benham, Managing Director, said the accounts for the year ended Sept. 30 last were not so good as those of the previous year. The building trade had fallen off, hotels both in London and on the South Coast had mostly had a bad season, and they had undoubtedly felt the effects of the slump or recession —the main cause of which had been the international situation. Every department showed a decline from last year both in turnover and net profit, although the total figures were still the third best in the history of the Company. Latterly things had improved again considerably after a rather thin autumn.

The heating and ventilation section of the business had again enjoyed a successful year, although the returns were not quite so good as last year. In the cooking apparatus department they had also had a good year, although again not quite so good. The most important item of all was that they had secured running contracts from the War Office for various of their apparatus for barracks both at home and abroad. This naturally had not benefited them hitherto, but they expected big things in the future, as the contracts were part of the great barracks improvement scheme instituted by the Minister for War.

They had made large extensions to their works at Wandsworth. As he foreshadowed last year, they made an issue privately of £25,000 5½% redeemable preference shares. Under their profit-sharing scheme all members of the staff would get 5%, and all workmen 3½%, on their earnings for the year. The Directors proposed to place £8,000 to the reserve fund, which would then stand at £103,000, and recommended the payment of a final dividend of 6%, less tax, making 10%, less tax, for the year, *plus* a bonus of 6d. per share.

The U.K. Corporation Grid

Some Interesting Particulars

Some particulars are now available of the production unit to be erected by the United Kingdom Gas Corporation, Ltd., at Hemsworth, Yorkshire, on which work has begun. It is hoped to complete the plant in the spring of next year.

The installation will consist of a battery of twenty-eight Lecoq compound silica ovens with a productive capacity of 8¼ million cu.ft. per day of 500 B.Th.U. gas. The ovens will be 14 ft. deep and have a mean width of 17¼ in. They will be arranged in parallel series, and heated with gas from the ovens themselves, although there are also to be auxiliary producers for use when necessary. The doors of the ovens are to be self-sealing.

Built at the pit-head, these ovens will require more than 4,000 tons of coal a week, providing employment for 570 miners. The cost of the installation is understood to be in the region of £350,000. In the first stage alone, the grid which will be supplied from the ovens and serve nineteen thickly populated areas in Yorkshire, will represent a total capital investment of £2,000,000. There will be sixteen distributing centres, which will form "key" points in the system. The distributing centres will in turn supply the gas, with their own output, to both industrial and domestic consumers in their areas. The plant is being erected by Coking and By-Products, Ltd., 58, Victoria Street, S.W. 1.

The gas is to be freed of tar fog in Lodge-Cotterill electrostatic precipitators and treated in high-pressure crude gas benzole washers, which, incidentally, will reduce the residual sulphur content of the gas down to 8 grains per 100 cu.ft. The gas will be purified in oxide boxes before being compressed to 30 lb. per sq.in. for distribution, this work being carried out by electrically-driven compressors. Before entering the 18 in. trunk main, the gas will be metered by a Thomas electroflo meter.

Among ancillary plant there are to be a water softener capable of treating 2,000 gallons of water per hour, ammonia concentration plant, and water coolers.

For the operations of the plant, coal will be conveyed straight from the colliery washeries to eight 200-ton drainage bunkers, adjoining the ovens, from which it will be automatically fed to the crushers and then conveyed to a 1,000-ton service bunker. An interesting feature is that coal from outside sources can be fed to the plant from any point in the coal conveying system should the necessity arise.

It is visualized by the Corporation that the scheme will be the beginning of a series of similar ones, which, when fully developed, will provide the means of making industry in this country not only entirely independent of imported fuel supplies but more economical through the use of more efficient gas fuel.

It is stated that a feature of the plant will be its handsome layout and striking appearance, the design of the architectural features having been in the hands of M. Tobback, who is a member of the Belgian Royal Society of Water Colour Artists.

Athletic and Social

Tunbridge Wells Long Service Presentation.

At the annual supper and concert of the Gasco Athletic Club a grandfather clock was presented to Mr. J. E. Lambert, General Works Foreman of the Tunbridge Wells Gas Company, who retired recently after serving the Company for fifty-four years.

Grosvenor Staff Dinner.

Presided over by Captain L. E. Cottrell, the second annual staff dinner of Gas Stove Renovators, Ltd., Grosvenor Utilities, Ltd., Grosvenor Enamelling Company, Ltd., Turner, Mausden & Co., Ltd., and the Ufix Boiler Company, Ltd., held at the Restaurant Frascati on Dec. 20, was attended by nearly 70 members and guests, and the success of the event was in itself a tribute to the organizing committee, comprising Miss P. R. Wood, Miss C. McCrea, Mr. W. H. Cooper, and Mr. J. H. Hamilton. All the nine Directors were present, and proposing their toast, coupled with that of the Secretary (Miss Wood) and the staff, Captain Cottrell acknowledged the unstinted support of all his colleagues and predicted a new year of increasing success. Response to the toast of the guests, proposed by Mr. Cooper, was made by Mr. A. B. Kent, of the Sterling Manufacturing Company, Ltd., and Mr. Stewart, one of the auditors.

Lancashire Dynamo and Crypto : London Dinner.

On Dec. 15, a Company Dinner for the Sales and Works Executives of the Lancashire Dynamo and Crypto, Ltd., Organization (including the Foster Engineering Company, Wimbledon; Crypton Equipment, Ltd., Willesden; and Dynamo and Motor Repairs, Ltd., Wembley) was held at Pagani's Restaurant, W. 1.

The toast of "The Parent Company" was proposed by Mr. M. V. Ely (Managing Director of the Foster Engineering Company, Ltd.) who emphasized the importance of loyalty to the firm. When responding on behalf of Lancashire Dynamo and Crypto, Ltd., Mr. H. W. Bosworth (Managing Director) referred to the various sections of the Company's activities represented by those present.

After the dinner, during the intervals between the entertainment provided by several well-known artistes, full advantage was taken of the opportunity to discuss the many subjects of common interest between the various members.

Clayton Sports Association Annual Dinner.

The annual dinner of the Sports Association of the well-known engineering firm of Messrs. Clayton, Son, & Co., Ltd., of Hunslet, Leeds, was held recently, being well attended by Officials and employees of the firm, under the Chairmanship of Mr. Joseph Clayton.

When proposing the toast of "The Firm and the Sports Association," Mr. R. N. Webb (Vice-Chairman of the Leeds Cricket League) said that as Clayton Sports Association were going ahead rapidly with ground improvements, and as they already had a team of no mean calibre, they were entitled to a position in one or other of the two senior groups of the proposed new Cricket League in Leeds and district—a League which, he claimed, would be one of the strongest in the North of England.

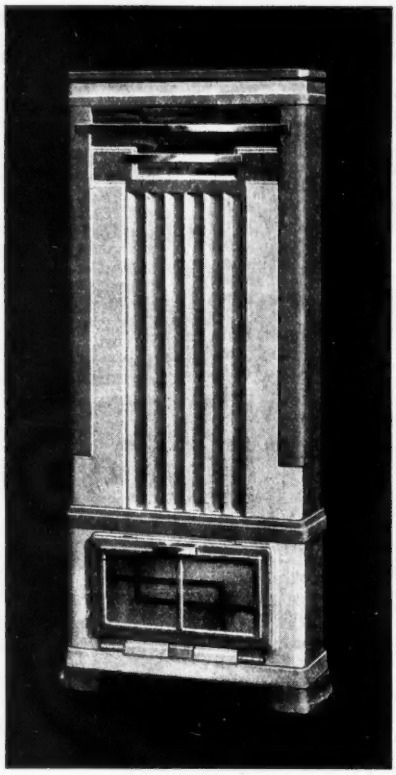
Replying, the Chairman emphasized the spirit of goodwill among the workpeople of the firm, and pointed out that this happy relationship had always been regarded as of paramount importance. During the 76 years they had been in business they had not had one single serious dispute with their employees.

A presentation was made on behalf of the members by Mr. J. J. Baines to Mr. S. L. Howarth, in appreciation of his services as Hon. Secretary of the Sports Association from April, 1937, to April, 1938. The report on the working of the Association during the past year indicated it was now on a more sound basis than at any time since its inception eighteen years ago.

The Angling, Bowls, and Golf Sections all reported progress and increased membership. The Football and Swimming Sections had been successful, the Rugby and the swimming teams both being narrowly beaten in the respective finals of their competitions. The Cricket Section had also had a successful season. The first team finished second in the Leeds Cricket League, one point behind the champions, and were runners-up in the "Wood" Cup and Hunslet Workshop Competitions. The trophies, together with replicas and prizes, in connexion with the various Sections, were handed to the winners by Mrs. Clayton.

The children of the members had also been well catered for, nearly 200 of them being taken to Redcar on July 16, following a very successful "Field Day" on the Sports Ground on July 9. They were still further entertained at a Christmas Party held on Dec. 17, when each child received a gift to round off the day's enjoyment. On the same day as the children's party a large number of employees and their lady friends attended the annual Christmas whist drive, when over 20 prizes were distributed.

The Ideal Gas Heater for



ENTRANCE HALLS
OFFICES · SHOPS
CORRIDORS
SCHOOLS · ETC.

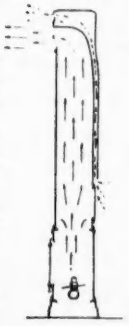
COMPACT, SMART AND ECONOMICAL

The VELOMAIN Heater is the best thing in Space Heating yet designed. In the first place, it needs no flue, the gas consumption being inside the limits for flueless heaters. Secondly, it is a most satisfactory heater, as it warms up quickly and circulates the air of a room 12×10×10 ft. over 2½ times each hour. As is fitting, its design is modern, and it is made in a variety of colour finishes, blending harmoniously with any scheme of decoration. Furthermore, thought has been given to upkeep. The design is simple and accessible for the little cleaning required, while the body is made from sheet steel, for long service, with cast-iron partswhere rigidity and strength are required.

TWO GREAT IMPROVEMENTS

Two very important developments have been achieved in the VELOMAIN Space Heater. The design ensures that the top and back do not become unpleasantly hot, while the heat is projected into the room at such an angle as to prevent discoloration of the walls or ceiling immediately behind or above the heater, thus obviating one of the greatest drawbacks found in the ordinary radiator of the past.

NOTE THESE UNIQUE PRINCIPLES



1. The large volume of pure air mixed with the heat stream issues horizontally from the Heater and so quickly warms the apartment.
2. The front body of the Heater is evenly warmed throughout its length.
3. The top and exterior back are kept cool by the constant stream of fresh air passing up the double back. Wall decorations are thus saved from damage by discoloration or deposit.
4. The amount of pure air drawn through the Heater ensures perfect combustion; prevents overheating and abolishes the necessity for any thermostatic device.

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Cannon Results

The difficulties of trading during the past year are well exemplified in the accounts recently issued by Cannon Iron Foundries, Ltd., for the twelve months ended Sept. 30 last. It is certain that "Cannon" productions have suffered no decline in popularity in the Gas Industry, but ample warning has been given by Company Chairmen at annual meetings in recent years of the inevitable effect of rising production costs—particularly raw material, labour, and fuel.

The passing of the ordinary dividend had already indicated less satisfactory results than in recent years; the accounts reveal that trading profit declined from £62,148 to £32,962, and, after necessary appropriations, net profit was down by £27,064 to £4,999. Preference dividends call for £8,044, and carry-forward is reduced from £10,988 to £7,943.

Lanchester's "Potted Logs"

In this extremely useful little publication a new system is disclosed by which the logarithms of numbers running to seven or eight figures may be evaluated to seven places of decimals and *vice versa*. The inception of the idea on which the system is based came to Dr. F. W. Lanchester when occupied with the rather tedious process of making an inverse use of a standard table of seven-figure logs. What he needed was a table of antilogarithms, and that he could not find. Having appealed to the Astronomer Royal, Dr. Spencer Jones, he was told that the standard table was Filipowski (1861), and that there was no modern book of tables giving similar information in the same form. Dr. Lanchester at once set to work with the knowledge that the task was no light one. He was able to check his results with another antique set of tables compiled by Dodson in 1742. In the compilation of the present tables, Dr. Lanchester has done everything in his power to ensure accuracy, even to the extent of having the tables printed from photo-blocks of his own typescript.

The table, consisting of five pages only, is interpreted by the aid of a slide rule. It will give, at one setting, logarithms to seven places for seven or eight figure numbers, and *vice versa*. By way of comparison it may be stated that a straight table of logarithms of equal capacity would occupy about fifty "goodly tomes" and require a wheelbarrow for its transport! The table is published by Taylor & Francis, Ltd., Red Lion Court, Fleet Street, E.C. 4, price 1s.

Trade News

Lighting Air Raid Shelters.

We have received from Messrs. R. & A. Lister & Co., Ltd., Imperial House, 15, Kingsway, W.C. 2, a copy of their handsome booklet on the lighting of air raid shelters. Lister standby plant has been installed in shelters erected by many well-known firms and municipal authorities.

Cox & Danks, Ltd.: Swansea Offices.

On Christmas Eve the Swansea office of Messrs. Cox & Danks, Ltd., scrap metal merchants, made a move to larger premises at 237-238, High Street, Swansea. Here under the direction of Mr. W. C. Howe, one of the Directors of the firm, Cox & Danks are now able to handle their ever-increasing Swansea business with even greater efficiency and speed. These new offices are among the most up-to-date and efficiently equipped in the country.

Large Cooking Equipment.

We have received from Radiation Ltd., pages for inclusion in their excellent large cooking equipment catalogues. These deal with such appliances as the No. 3324 roasting and baking oven, "Savoy" griller and salamander, "Savoy" griller—"B" pattern—"Savoy Minor" griller and toaster, "Belgravia" hotcloset and carving tables (Regulo-controlled), and the "Belgravia Minor" hotcloset (also Regulo-controlled).

Largest Wagon in the World.

Head, Wrightson, & Co., Ltd., of Thornaby-on-Tees, announce that they have received an order from the English Steel Corporation for a 300-ton main line bogie wagon designed for use in their Sheffield Penistone Works, with a working load of 300 tons and for use on open line working up to 200 tons. This is believed to be the largest wagon in existence, although it is thought there is a 200-ton wagon working regularly in Russia and the L.N.E.R. are building a 150-ton wagon.

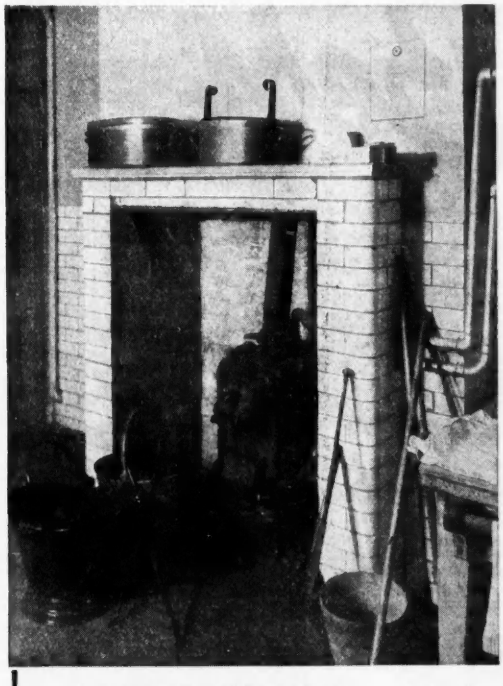
The wagon in question is revolutionary in design, being entirely welded and built of high tensile steel. It is 60 ft. long over the buffers and is mounted on four bogies which are articulated so that the wagon can negotiate an 85 ft. radius curve. The wagon runs on 24 wheels and when completed will make the journey from Thornaby-on-Tees to Sheffield over the main line.

WHAT EVERY "WOMAN" SHOULD KNOW

in

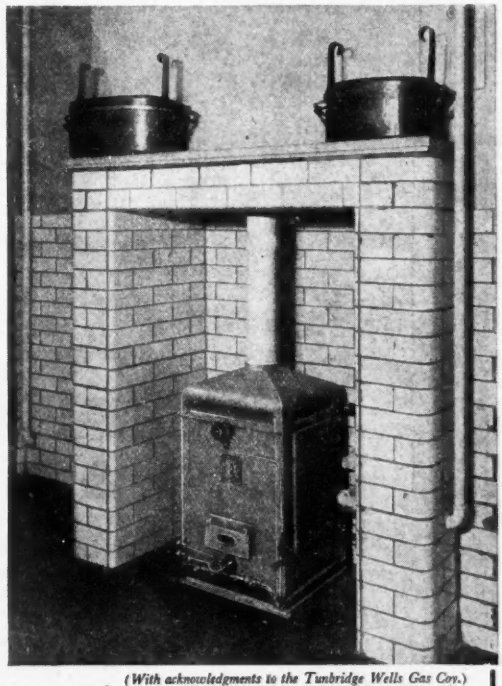
1939

Nuf-sed!



Catalogue of Gas-fired Water Heaters, Storage Apparatus and Central Heating Boilers with brochure will be sent on request.

We extend to all our friends in the Gas Industry our Good Wishes for Xmas and the New Year



(With acknowledgments to the Tunbridge Wells Gas Co.)

THOMAS POTTERTON (Heating Engineers) **LTD.**

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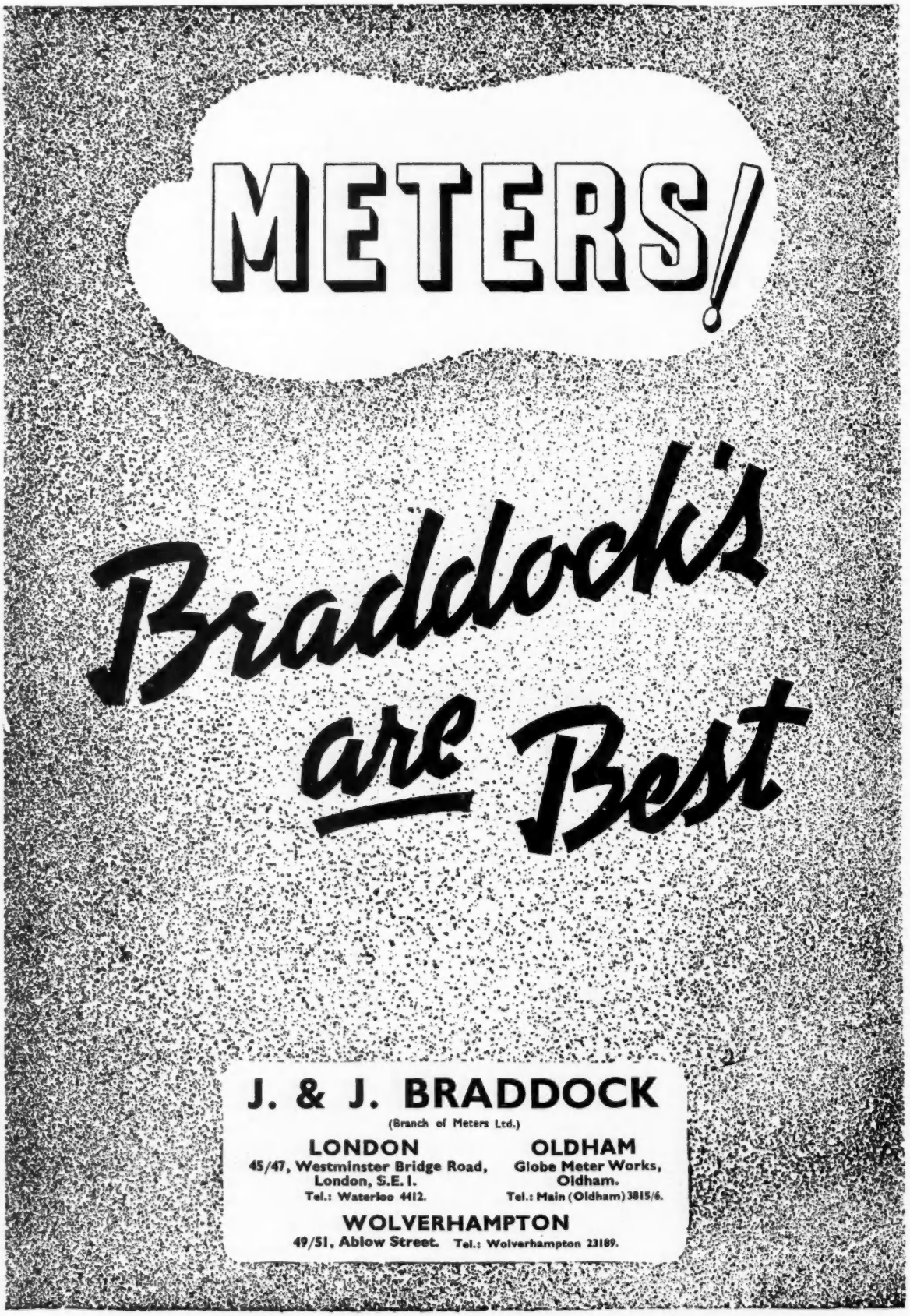
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Markets and Manufactures

Current Sales of Gas Products

The London Market

Dec. 23.

Prices of Tar Products in the London market remain steady at the levels indicated on the 19th inst.

The Provinces

Dec. 23.

Crude Gas-Works Tar, 14s. to 19s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 29s. to 30s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 29s. to 30s.* Toluole, naked, North, 1s. 7½d. to 1s. 9d. Coal tar, crude naphtha, in bulk, North, 7½d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 5d. Heavy naphtha, North, 1s. 2½d. to 1s. 3d. Creosote, *ex* works, in bulk, North, liquid and salty, 4⅜d. to 4⅝d.; low gravity, 4¼d. to 4⅜d. Carbolic acid, 60's, 1s. 7d. to 1s. 10d. Naphthalene, £13 10s. to £16. Salts, 70s. to 75s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal; "B" quality unsaleable. Heavy oil; Unfiltered anthracene oil, min. gr. 1,080, 4¼d. to 4⅞d.; filtered anthracene oil, min. gr. 1,080, 5½d. to 5¾d.; heavy tar oil, gr. less than 1,080, 4½d. to 4¾d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Scotland

GLASGOW, *Dec.* 24.

Market continues quiet and no material alteration is now expected until after the Christmas and New Year holidays.

Crude gas-works tar.—Actual value is about 35s. to 36s. per ton *ex* works in bulk.

Pitch is easier at 21s. to 22s. per ton f.o.b. for export, but the home price remains unchanged at round 20s. per ton *ex* works in bulk.

Refined tar.—Price for home delivery is 3¼d. to 4d. per gallon, while for export competition is keen at round 2¾d. to 3d. per gallon, both into buyers' packages at makers' works.

Creosote oil.—Very little new business is being placed and prices are as under: Specification oil, 3¾d. to 4d. per gallon; low gravity, 4¼d. to 4½d. per gallon; neutral oil, 3¾d. to 4¼d. per gallon; all *ex* works in bulk.

Cresylic acid.—Business is not at all easy despite the low prices being quoted as under: Pale, 97/99%, 1s. 2d. to 1s. 3d. per gallon; dark, 97/99%, 1s. to 1s. 1d. per gallon; and pale, 99/100%, 1s. 4d. to 1s. 7d. per gallon; all according to quality *ex* works in buyers' packages.

Crude naphtha is steady at 5½d. to 6d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade remains at 1s. 3½d. to 1s. 4d. per gallon and 90/190 heavy naphtha at round 1s. 1d. to 1s. 1½d. per gallon.

Motor benzole is 1s. 3d. to 1s. 4d. per gallon.

Pyridine.—90/160 grade is 8s. to 9s. per gallon and 90/140 grade is 9s. to 10s. per gallon.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole..	0	9½	to	0	10	per gall. at works
Motor „ ..	1	3	„	1	3½	„ „ „
90% „ ..	1	4	„	1	4½	„ „ „
Pure „ ..	1	8	„	1	8½	„ „ „

Contracts Advertised To-Day

Carburetted Water Gas Plant.
Glasgow Gas Department. [p. 990.]

Exhausting Plant.
Tipton Gas Department. [p. 990.]

Gasholder.
Tipton Gas Department. [p. 990.]

Repairs to Gasholder Framework.
Mansfield Gas Department. [p. 990.]

Static Washer.
Tipton Gas Department. [p. 990.]

Tar Extractor.
Tipton Gas Department. [p. 990.]

Diaries, Calendars, &c., Received

Seasonable gifts in the form of diaries, calendars, &c., have been received from the undermentioned friends, whose good wishes are cordially reciprocated:

G. A. Harvey & Co. (London), Ltd., Woolwich Road, S.E. 7.
Standard Furnace and Setting Company, Southport.
Stroud Gas Light and Coke Company.

Tyldesley Gas Department

Further progress is reported in the Annual Report of the Tyldesley U.D.C. Gas Department. The total income for the year amounted to £13,105, and the expenditure £12,565, making a gross profit of £540. Interest and sinking fund charges amounted to £228, leaving a profit of £312 on the year's working, which increases the credit balance to £3,686. There was no expenditure on capital account, and the amount of loan capital owing at the beginning of the year was £2,196. Loan capital paid off was £150, which leaves £2,037 outstanding. The volume of gas made was 62,208,000 cu.ft. —630,000 cu.ft. more than last year. The total amount of gas sold was 562,200 cu.ft. more than the previous year, creating another record. During the year the unaccounted-for gas was 10·19%, while sales during the year at the showrooms totalled £2,349.

PROTECT WITH

METROTECT

a bituminous paint producing a pleasant satin black finish with highly waterproof and anti-corrosive properties.

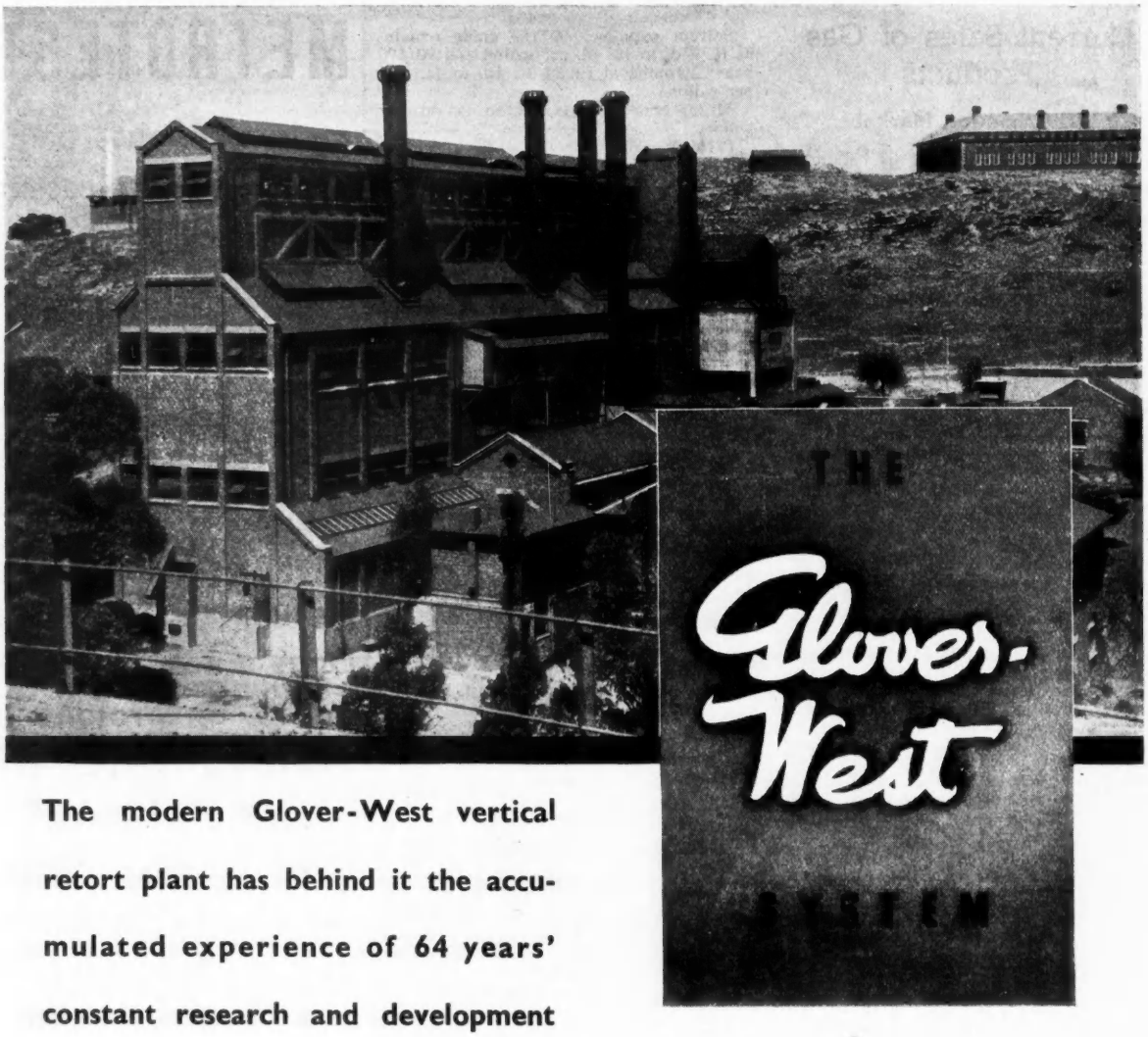
Protects steel-work which is continuously or periodically immersed in water. Does not become brittle on prolonged atmospheric exposure. METROTECT flows freely under the brush and can be applied quickly and without effort even in cold weather.

Prices and further particulars from—

SOUTH METROPOLITAN GAS CO.

PRODUCTS DEPARTMENT,
REGIS HOUSE,
KING WILLIAM STREET,
E.C.4.

● CARBONIZATION IN VERTICAL RETORTS



The modern Glover-West vertical retort plant has behind it the accumulated experience of 64 years' constant research and development for the advancement of gas production methods the world over.

● *430 plants have been built or are on order for 230 Gas Undertakings in 24 countries.*

The picture shows the three installations of Glover-West vertical retorts at Johannesburg City Council's Cottesloe gasworks. The carbonising unit of the complete modern gasworks ordered for Johannesburg from this company in 1926 has been trebled to meet the rapid growth of demand. The latest extension put to work in 1937 is nearest the camera.

WEST'S GAS IMPROVEMENT CO. LTD.,

MANCHESTER: Albion Ironworks, Miles Platting ■ LONDON: Columbia House, Aldwych, W.C. 2

GAS STOCKS AND SHARES

The usual holiday atmosphere was abroad on the Stock Exchange last week, and although business continued on the small side the general undertone was one of confidence. With only three days' business this week and another holiday next Monday, it is not anticipated that a return to really serious business will materialize until after these are out of the way. After early weakness, due to foreign selling, the prices of gilt-edged stocks made a good recovery later, but little change was noticeable in the home rail market, which, under the influence of poor traffic returns, remained idle. There were signs of improvement in the Industrial market, especially among iron, steel, and aircraft shares. Oil and rubber shares were quiet, and there was little done in the Kaffir market.

The volume of business in Gas stocks and shares was also on the light side, and, apart from a number of *ex* interest markings, prices remained steady. Wandsworth ordinary hardened a point to 138½, Barnet ordinary recorded a fractional improvement to 160, but Commercial ordinary reacted 1 to 79½. It is regretted that the latest prices at the Provincial Exchanges and in the Supplementary List are not available owing to the lateness of Christmas mails.

The past week has been an anxious one for gas engineers, but the many new records established for daily output have compensated to some extent for the previous periods of unseasonable weather during the year. Both consumers and investors alike should be well satisfied with the services rendered by the Industry.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Dec. 23.	Rise or Fall on Week.
1,767,439	Sept. 5	8	8	Alliance & Dublin Ord. ...	130—140	...
374,000	Dec. 19	4	4	Do. 4 p.c. Deb. ...	93—98*	−2
734,733	Nov. 7	5	5	Assed. Gas & Water U'd'ts Ord.	17/—19/—	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/—	...
444,389	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	19/—21/—	...
296,523	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	16/—18/—	...
500,000	Sept. 5	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98	...
560,070	Aug. 22	7	7	Barnet Ord. 7 p.c.	158—162	+½
300,000	Oct. 10	1/9⅓	1/4⅔	Bombay, Ltd.	24/—26/—	...
180,435	Aug. 22	9⅓	9⅓	Bournemouth sliding scale ...	195—205	...
640,40?	,,	7	7	Do. 7 p.c. max. ...	157—162	...
495,960	,,	6	6	Do. 6 p.c. Pref. ...	130—135	...
50,000	Dec. 19	3	3	Do. 3 p.c. Deb. ...	75—80*	...
312,025	,,	4	4	Do. 4 p.c. Deb. ...	96—101*	−1
335,000	,,	5	5	Do. 5 p.c. Deb. ...	113—118*	−2
357,900	Aug. 8	7½	7½	Brighton, &c., 6 p.c. Con. ...	142—147	...
659,955	,,	6½	6½	Do. 5 p.c. Con. ...	126—131	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref.	125—130	...
855 000	Sept. 19	8	7	British Ord.	133—138	...
100,000	Dec. 19	7	7	Do. 7 p.c. Pref	138—143*	−2
350,000	,,	5⅓	5⅓	Do. 5½ p.c. 'B' Cum. Pref.	112—117*	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—100*	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	100—105*	...
450,000	,,	3⅛	3⅛	Do. 3⅛ p.c. Red. Deb. ...	90—95*	...
100,000	22 May'33	6	4	Cape Town, Ltd.	1—2	...
100,000	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1—2	...
150,000	Dec. 19	4½	4½	Do. 4½ p.c. Deb. ...	60—70*	...
626,860	July 18	6	6	Cardiff Con. Ord.	118—123	...
237 860	Dec. 19	5	5	Do. 5 p.c. Red. Deb.	103—108*	−2
98,936	Sept. 19	2/—	2/—	Colombo Ord....	1⅛—1⅞	...
24,510	,,	1/4⅛	1/4⅛	Do. 7 p.c. Pref.... ...	22/6—24/6	...
739,453	Oct. 10	−/11·48	−/11·48	Colonial Gas Assn. Ltd. Ord.	16/6—18/6	...
296,144	,,	1/3·30	1/3·30	Do. 8 p.c. Pref. ...	23/6—25/6	...
1,775,005	Aug. 8	5	5	Commercial Ord.	77—82	−1
140,000	,,	—	§13/4	Do. 4 p.c. Red. Pref.	95—100	...
620,000	Dec. 5	3	3	Do. 3 p.c. Deb. ...	71—76	...
286,344	Aug. 22	5	5	Do. 5 p.c. Deb. ...	113—118	...
200,000	,,	—	§30/2	Do. 3½ p.c. Red. Deb.	97—102	...
807,560	Aug. 8	7	7	Croydon sliding scale ...	136—141	...
644,590	,,	5	5	Do. max. div. ...	100—105	...
620,385	Dec. 19	5	5	Do. 5 p.c. Deb. ...	112—117*	−1
239,000	Aug. 8	5	5	East Hull Ord. 5 p.c.	95—100	...
186,155	Aug. 8	6	6	East Surrey Ord. 5 p.c. ...	116—121	...
176,211	Dec. 5	5	5	Do. 5 p.c. Deb. ...	112—117	...
250,000	Nov. 7	8	4	Gas Consolidation Ord. 'B' ...	19/—21/—	...
250,000	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	17/6—19/6	...
9,223,324	Aug. 8	5	5	Gas Light & Coke Crd. ...	22/3—23/3*a*	...
2,600,000	,,	3½	3½	Do. 3½ p.c. max. ...	79—82	...
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref. ...	98—101	...
2,993,000	July 4	—	3½	Do. 3½ p.c. Red. Pref. ...	98¼—101½	+½
8,602,497	Nov. 21	3	3	Do. 3 p.c. Con. Deb....	77—80	−1
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb....	109—113	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb....	107—111	...
700,000	Sept. 5	3½	3½	Do. 3½ p.c. Red. Deb....	93—98	...
270,466	Aug. 22	6	6	Harrogate New Cons. ...	117—122	...
157,500	Mar. 21	1/2½	‡1/—	Hong Kong and China Ord....	1—1	...
213,200	Aug. 8	6	5⅓	Hornsey Con. 3½ p.c ...	97—102	...
5,600,000	Oct. 24	12	8	Imperial Continental Cap ...	108—113	...
223,130	July 18	3½	3½	Do. 3½ p.c. Red. Deb....	87—92	...
235,242	Aug. 8	8½	8½	Lea Bridge 5 p.c. Ord. ...	160—165	−2
63,480	Dec. 19	3	3	Maidstone 3 p.c. Deb. ...	69—74*	−1
45,000	Nov. 21	†10	†10	Malta & Mediterranean ...	130—135	...
				Metropolitan (of Melbourne)		
392,000	Oct. 3	5½	5½	5½ p.c. Red. Deb.	100—105	...
231,977	Aug. 22	5	5	M.S. Utility 'C' Cons. ...	99—104	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref.	95—100	...
390,076	Dec. 19	4	4	M.S. Utility 4 p.c. Deb. ...	93—98*	−2
148,955	,,	5	5	Do. 5 p.c. Deb. ...	112—117*	−1
125,000	July 1	3½	3½	Do. 3½ p.c. Red. Bds.	95—98	...
675,000	Nov 21	†6	†6	Montevideo, Ltd.	70—75	...
250,000	Aug. 8	7½	7½	North Middlesex 6 p.c. Con.	142—147	...
396,160	Aug. 8	5	5	Northampton 5 p.c. max. ...	105—110	...
300,000	Oct. 24	†7	†9	Oriental, Ltd.	145—150	...
468,537	Dec. 5	8	7⅔	Plymouth & Stonehouse 5 p.c.	135—145	...
621,667	Aug. 8	8½	8½	Portsmouth & Gosport Cons.	157—162	...
241,446	,,	5	5	Do. 5 p.c. max. ...	100—105	...
73,350	,,	5	5	Do. 5 p.c. Pref. ...	107—112	...
75,000	,,	4	4	Do. 4 p.c. Pref. ...	90—95	...
114,000	Aug. 8	5	5	Preston 5 p.c. Pref.	105—110	...
247,966	Dec. 19	4	4	Primitiva 4 p.c. Cons. Deb. ...	96—101*	−2
625,959	July 18	4	4	Do. 4 p.c. Red. Deb. ...	94—99	...
15,000	Sept. 5	6	6	San Paulo 6 p.c. Cum. Pref. ...	8½—9	...
441,275	Sept. 19	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	20/6—22/6	...
460,810	Sept. 19	−/10⅝	−/10⅝	,, ,, 4½ p.c. Cum. Pref.	19/6—21/6	...
133,201	Aug. 22	5	8½	Shrewsbury 5 p.c. Ord. ...	143—148	...
9,000	June 3	4	‡4	South African Ord.	4¼—5½	...
1,371,752	Aug. 22	1/2⅜	1/2⅜	South East'n Gas Cn. Ld. Ord.	21/—23/—	...
871 636	,,	−/10⅜	−/10⅜	Do. 4½ p.c. Red. Cum. Pref.	19/—21/—	...
498,818	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/—20/—	...
450,000	Aug. 8	4	4	Do. 4 p.c. Deb.	99—102	...
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—97	...
6,709,895	Aug. 8	6	5	South Met. Ord.	103—106	...
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	128—133	...
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	95—100	...
1,895,445	Dec. 19	3	3	Do. 3 p.c. Deb.	74—79*	−1
1,000,000	July 4	5	5	Do. 5 p.c. Red. Deb. ...	107—112	...
600,000	,,	—	§31/—	Do. 3½ p.c. Red. Deb. ...	97—102	...
1,543,795	Aug. 8	6	6	South Suburban Ord. 5 p.c. ...	113—118	...
512,825	,,	5	5	Do. 5 p.c. Pref.... ...	108—113	...
500,000	,,	4	4	Do. 4 p.c. Pref.... ...	95—100	...
250,000	,,	3½	3½	Do. 3½ p.c. Red. Pref. ...	92—97	...
888,587	Dec. 5	5	5	Do. 5 p.c. Deb.	113—118	...
250,000	,,	4	4	Do. 4 p.c. Deb.... ...	95—100	...
200,000	Aug. 8	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—99	...
427,859	Sept. 19	8⅛	9⅛	S. Western Gas & Water Ord.	16/—18/—	...
160,523	Oct. 10	−/10⅛	−/10⅛	Do. 4½ p.c. Red. Cum. Pf.	19/—21/—	...
110,000	Dec. 19	4	4	Do. 4 p.c. Red. Deb. ...	93—98*	−2
750,541	Aug. 8	5⅛	5	Southampton Ord. 5 p.c. ...	105—110	...
148,836	Dec. 19	4	4	Do. 4 p.c. Deb.	93—98*	−2
350,000	Aug. 8	5⅛	5⅛	Swansea 5½ p.c. Red. Pref. ...	105—110	...
200 .000	Dec. 19	3⅛	3⅛	Do. 3½ p.c. Red. Deb. ...	92—97*	−1
1,076,490	Aug. 8	6⅛	6⅛	Tottenham and District Ord.	125—130	...
409,835	,,	5⅛	5⅛	Do. 5½ p.c. Pref. ...	116—121	...
62,235	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
334,615	Dec. 5	4	4	Do. 4 p.c. Deb. ...	95—100	...
85,701	Nov. 21	6	6	Tuscan 6 p.c. Red. Deb. ...	95—100	...
1,131,550	Aug. 22	6	4	U. Kingdom Gas Cor. Ord. ...	17/6—19/6	...
1,051,280	Nov. 7	4⅛	4⅛	Do. 4½ p.c. 1st Cum. Pref.	19/—21/—	...
762,241	,,	4	4	Do. 4 p.c. 1st Red. Cum. Pf	19/—21/—	...
745,263	Dec. 19	4⅛	4⅛	Do. 4½ p.c. 2nd Non-Cum.Pf.	15/6—17/6*	...
1,066,186	Sept. 5	3⅛	3⅛	Do. 3½ p.c. Red. Deb. ...	95—96	...
375,689	Aug. 8	7	7	Uxbridge, &c., 5 p.c.	125—130	...
133,010	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
1,371,138	Aug. 8	7	7	Wandsworth Consolidated ...	136—141	+1
2,525,768	,,	4	4	Do. 4 p.c. Pref. ...	95—100	...
1,343,964	Dec. 19	5	5	Do. 5 p.c. Deb. ...	113—118*	−2
383,745	,,	4	4	Do. 4 p.c. Deb. ...	95—100*	...
400,000	,,	§25/—	3⅛	Do. 3½ p.c. Red Deb.	96—101*	−1
558,342	Aug.	7	6⅔	Watford and St. Albans Ord.	128—133	...
200,000	,,	5	5	Do. 5 p.c. Pref. ...	107—112	...
200,000	,,	5⅛	5⅛	Do. 5½ p.c. Pref. ...	113—118	...
200,000	,,	—	16/8§	Do. 4 p.c. Red. Pref.	95—100	...
200,000	Dec. 19	4	4	Do. 4 p.c. Red. Deb.	95—100*	−1
200,000	,,	3⅛	3⅛	Do. 3½ p.c. Red. Deb.	92—97*	...

a.—The quotation is per £1 of stock. * Ex. div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Cont.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations Dec. 23.	Rise or Fall on Week.
202,152	Sept. 5	5	5	Ascot Ord.	101—106	...
128,182	July 18	5	5	Do. 5 p.c. Pref.	108—113	...
31,035	Aug. 22	-/4⅛	-/4⅛	Associated Utilities 4 p.c. Pref.	16/—18/-	...
100,000	Dec. 13	...	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
17,000	Aug. 22	8	8	Bognor Orig. Ord. 'A' ...	155—165	...
62,210	,,	8	8	Do. New Addl. 'A' ...	155—165	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	145—155	...
37,440	Aug. 8	10	10	Cam. Univ. & Town 10 p.c. max.	188—198	...
125,970	,,	7	7	Do. 7 p.c. max.	133—138	...
39,025	,,	5	5	Do. 5 p.c. max.	97—102	...
96,410	July 18	4½	4½	Cardiff 4½ p.c. Pref.	95—100	...
150,000	Aug. 8	4	4	Croydon 4 p.c. Pref.	97—100	...
130,000	June 20	4	4	Do. 4 p.c. Deb.	95—100	...
65,000	Aug. 8	8½	7½	Eastbourne 'A' 5 p.c. ...	140—145	...
198,000	,,	7	6	Do. 'B' 3½ p.c.	114—119	...
112,312	,,	5	5	Do. 5 p.c. Pref.	107—112	...
130,000	June 20	5	5	Do. 5 p.c. Deb.	112—117	...
24,000	Aug. 8	8½	8½	Great Yarmouth 8½ p.c. max.	43—48	...
59,400	,,	7½	7½	Do. 7½ p.c. max.	33—38	...
51,160	Dec. 5	5½	5½	Do. 5½ p.c. Deb.	120—125*	...
152,600	Sept. 5	9	8	Guildford Cons.	163—168	...
54,055	,,	5	5	Do. 5 p.c. Pref.	107—112	...
68,250	June 3	5	5	Do. 5 p.c. Deb.	107—112	...
156,600	Aug. 22	7½	7½	Hampton Court Cons. ...	131—136	...
80,000	Aug. 8	4	4	Lea Bridge 4 p.c. Pref. ...	90—95	...
60,000	,,	6	6	Do. 6 p.c. Pref.	121—126	...
94,876	Dec. 5	4	4	Do. 4 p.c. Deb.	94—99*	...
73,620	Sept. 5	8⅛	8⅛	Luton Cons. 'A'	153—163	...
107,960	Sept. 19	5½	4	Mid Kent Ord.	8½—9½	...
230,940	Aug. 8	10	10	Oxford & District Ord. ...	195—200	...
47,112	,,	5	5	Do. 5 p.c. Pref.	106—111	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	107—112	...
126,193	Nov. 7	7½	7½	Peterborough Ord.	137—142	...
64,990	Sept. 5	6½	7½	Redditch Ord....	118—128	...
166,850	Aug. 8	8	8	Romford Ord....	142—147	...
60,000	,,	4	4	Do. 4 p.c. Pref.	99—103	...
44,000	Sept. 19	5	5	Do. 5 p.c. Deb.	112—117	...
25,570	Aug. 8	5½	5½	Rugby 5½ p.c. Pref.	120—125	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	104—109	...
42,750	Dec. 5	5½	5½	Do. 5½ p.c. Deb.	117—122*	...
110,950	Aug. 22	8	8	Ryde Ord.	140—150	...
270,086	Sept. 5	7	7	Slough Ord.	128—133	...
21,000	June 20	5	5	Do. 5 p.c. Deb.	110—115	...
28,872	Nov. 7	5½	5½	S. Midland Gas Cpn. Ltd Ord.	19/—21/-	...
28 866	Sept. 5	4½	4½	Do. 4½ p c Red. Cum. Pref.	18/—20/-	...
117,228	Aug. 8	7	5	Swindon Cons.	102—107	...
60,425	Dec. 5	5	5	Do. 5 p.c. Deb.	110—115*	...
64,380	June 3	5	5	Torquay & Paignton 5 p.c. Pref.	107—112	...
130,000	Aug. 8	8	5	Wakefield Ord.	116—121	...
81,650	,,	5	5	Do. 5 p.c. max.	100—105	...
82,000	Aug. 8	6	6	Weymouth Ord.	103—108	...
98,384	Aug. 22	6	6	Wolverhampton 6 p.c. Pref.	118—123	...
160,000	June 20	5½	5½	Do. 5½ p.c. Rd. Db.	105—110	...
90,000	June 20	5	5	York 5 p.c. Red. Deb. ...	104—109	...
133,640	July 18	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	118—123	...
120,000	,,	5	5	Do. 5 p.c. Pref.	105—110	...
35,000	Dec. 5	5½	5½	Do. 5½ p.c. Deb.	120—125*	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Dec. 23.	Rise or Fall on Week.
347,756	July 18	6	5	Bath Cons.	117—119	...
1,667,250	July 18	5	5	Bristol, 5 p.c. max.	111—113	...
120,420	June 3	4	4	Do. 1st 4 p.c. Deb. ...	100—102	...
217,870	,,	4	4	Do. 2nd 4 p.c. Deb. ...	100—102	...
328,790	,,	5	5	Do. 5 p.c. Deb.	119—122	...
274,000	Aug. 8	5	5	Newport (Mon). 5 p.c. max....	97—99	...
13,200	Sept. 19	8⅝	7	Pontyp'l Gas & W. 10 p.c. 'A'	12⅜—13⅜	...
13,600	,,	6	5	Do. 7 p.c. 'B'	11¼—12¼	...
40,000	,,	6	5	Do. 7 p.c. 'C'	11¼—12¼	...
140,778	Aug. 8	5	5	Weston-super-Mare Cons. ...	106—108	...
64,338	June 20	4	4	Do. 4 p.c. Deb.	100—102	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	151—154	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Dec. 23.	Rise or Fall on Week.
157,150	Aug. 8	6½	5	Chester 5 p.c. Ord.	109—111	...
92,500	June 20	4	4	Do. 4 p.c. Pref.	95—99	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	87—90	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	97—101	...
2,167,410	Aug. 22	6	6	Liverpool 5 p.c. Ord.... ...	122—124	—½
245,500	June 20	5	5	Do. 5 p.c. Red. Pref. ...	100—105	...
306,083	July 18	4	4	Do. 4 p.c. Deb.... ...	100—102	...
106,280	Aug. 8	10	10	Preston 'A' 10 p.c.	198—208	...
188,219	,,	7	7	Do. 'B' 7 p.c.	131—141	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Dec. 23.	Rise or Fall on Week.
122,577	Aug. 8	8	8	Blyth 5 p.c. Ord.	160—162	...
732,000	Aug. 22	5	5	Hartlepool G. & W. Cn. & New	89½—90½	...
2,061,315	Aug. 8	5¼	5	Newcastle & Gateshead Con.	22/6—22/-a	...
682,856	,,	4	4	Do. 4 p.c. Pref. ...	99¼—100¼	...
776,706	June 20	3½	3½	Do. 3½ p.c. Deb. ...	89 —90	...
277,285	Oct. 24	5	5	Do. 5 p.c. Deb. '43 ...	103¾—105¾	...
332,351	Aug. 22	6	6	Sunderland 6 p.c. max. ...	135—137	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Dec. 23.	Rise or Fall on Week.
542,270	Aug. 8	9	6	Derby Con.	133—138	...
55,000	June 3	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	June 20	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Dec. 23.	Rise or Fall on Week.
10,000	Aug. 8	10	10	Great Grimsby 'A' Ord. ...	205—215	...
6,500	,,	10	10	Do. 'B' Ord. ...	205—215	...
79,000	,,	10	10	Do. 'C' Ord. ...	195—205	...
1,806,339	Aug. 22	6½	6½	Sheffield Cons.	140—142	...
95,000	July 4	4	4	Do. 4 p.c. Deb.	101—103	...

a The quotation is per £1 of Stock. * Ex div.

PUBLISHERS' NOTICE

TERMS OF SUBSCRIPTION

United Kingdom & Ireland : Advance Rate, 35/- per annum ; 18/- per half year. Credit Rate : 40/- per annum ; 21/- per half year.
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A copy of the "G.J." Calendar and Directory is presented to continuous subscribers.

CLASSIFIED ADVERTISEMENTS

Situations Wanted, 6d. a line (minimum 3/-, about 36 words). Situations Vacant, Plant for Sale and Wanted, Contracts, Public Notices, Educational, &c., 9d. a line (minimum 4/6). Financial Notices, 1/- per line. Box Number 6d. extra.

WALTER KING, LTD.,

Telephone : Central 2236-7-8. 11, BOLT COURT, FLEET STREET, LONDON, E.C. 4. Telegrams : Gasking, Fleet, London.

Momentous Measures

A Festive Measure

Ho ! Jester ride the Yule-tide log,
Your quips make fast and merry.
Let blazing hearth, good company,
And draughts of ale and sherry
Show modern folk, this time indeed,
Is one of retrospect—not speed.

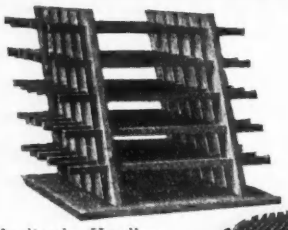
The 'A&M' Meter

A MODERN MEASURE
for the Gas Industry

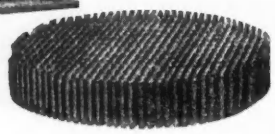
To wish all our friends the best of Christmas Happiness and New Year Prosperity.

ALDER & MACKAY LTD.

EDINBURGH~LONDON~BRADFORD & BRANCHES

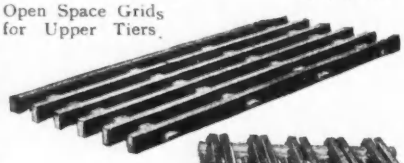


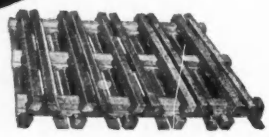
Inclined Hurdles (Light or Heavy Type) with Bottom Flat Grids.



Scrubber Grids.

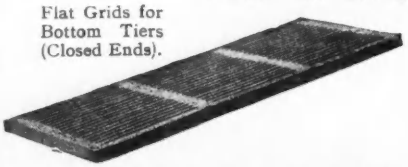
Open Space Grids for Upper Tiers.





Patent Double-Barred Grids.

Flat Grids for Bottom Tiers (Closed Ends).



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PURIFIERS, SCRUBBERS AND WASHERS

Embody the latest improvements — are of the very best quality—and are in use extensively throughout the Kingdom.

Send your enquiries for any kind of Grids to:—

CROSSLEY BROTHERS,
GRID WORKS, BISPHAM. LANCS.
Telephone: BLACKPOOL 51005 (2 lines). *Telegrams:* "CROSSLEY, BISPHAM."
LONDON OFFICE: Norfolk House, Norfolk Street, Strand, W.C. 2.

WHITTAKER ELLIS LTD.

Civil Engineering and Public Works Contractors

121 VICTORIA STREET, WESTMINSTER, S.W.1

Telephone: Victoria 4554 **Telegrams: "Whittakel, Sowest, London"**

and Midland Office:

Telephone: Colmore 4376 **122 COLMORE ROW, BIRMINGHAM, 3** **Telegrams: "Spigot, Birmingham"**

Specialists in ALL CLASSES OF GAS AND WATER MAINLAYING AND SERVICELAYING WORK

Construction of Roads and Sewers, Reinforced Concrete Work, Reservoirs, Heavy Excavations, etc.

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Experienced Men and Suitable Plant always available for Emergency Work at short notice

Telephones (Works Departments): London **Macaulay 2451-2.** Birmingham **Aston Cross 2241-2**

60% Sulphur absorbed by our

OXIDE

which has stood the test of 60 years

Minimum Costs, Highest Efficiency

ESTABLISHED 1873

GAS PURIFICATION & CHEMICAL COMPANY LIMITED

PALMERSTON HOUSE, 34, OLD BROAD STREET, LONDON, E.C. 2

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HANDLING PLANT

SCREENS, TIPPLERS, ETC.

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BRILLIANT BITUMEN COATING

PROTECTS ALL METALS
APPLIED LIKE PAINT
DRIES IN 2½ HOURS

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Manufacturers of GAS RETORTS, GLASSHOUSE FURNACE & BLAST FURNACE BRICKS, LUMPS, TILES, and every Description of FIRE BRICKS.

Special Lumps, Tiles, and Bricks for Regenerative and Furnace Work.

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WET AND DRY GAS METERS, PREPAYMENT METERS, STATION METERS AND GOVERNORS.

REPAIRS RECEIVE PROMPT ATTENTION.

Telephones: Main (Oldham) 3815/6, WATerloo 4412, London, and Wolverhampton 23189.

Telegrams: "Braddock, Oldham," and "Metrique, Lamb London."

PLANT, &c.

ROBERT DEMPSTER & SONS, LTD., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS, GASHOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. *Telegrams:* "Dempster, Elland." *Telephone:* Elland 261 (Private Branch Exchange).

FIRTH BLAKELEY, SONS, & CO., LTD., Vulcan Ironworks, Church Fenton, Tadcaster, Yorks.,

MANUFACTURERS of Gasholders, Tanks, Condensers, Purifiers, Scrubbers, Washers, and every description of Gas Plant.

Sole Makers of the "P.M" semi-water Gas Plant.

Telegrams: "Blakeleys, Church Fenton." *Telephone:* Barkston Ash 234 and 235 (Private Branch Exchange). Code: "Bentleys."

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Specialists

in the design and manufacture of:

WATER-GAS PLANT

Blue or Carburetted; Manually or Automatically operated.

PLANT &c. (Second Hand) FOR SALE and WANTED.

'PHONE 98 STAINES.

FOR SALE—Weir Feed Pump, 10½ in. by 7 in. by 16 in., G.M. Water End. Spencer Hopwood Vertical Boiler, 9 in. by 4 ft., 120 lbs. 30 kW Belliss Steam Set, 220 Volt D.C. Air Receiver, 13 ft. by 7 ft., 60 lbs. w.p.

HARRY H. GARDAM & CO., LTD., STAINES.

FOR SALE—

(*a*) WECK VALVE.—One 6 in. dia. 8-Way Weck Valve, with Drain Pipes and Seal Pot. In nearly new condition.

(*b*) GAS ENGINE.—Crossley Horizontal Industrial Type, variable Governed Town Gas Engine. Capable of developing 12¼ H.P. normal, 13½ H.P. maximum when running at 500 r.p.m. on 500 B.Th.U.'s Town Gas. In service for eight months only.

Apply to THE WHESSOE FOUNDRY & ENGINEERING COMPANY, LTD., DARLINGTON.

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Telephone: Mansion House 1156. *Telegrams:* "Balefire, London."

PLANT &c. (Second Hand) FOR SALE and WANTED.—(*Continued.*)

CORPORATION OF DUNDEE.

(GAS DEPARTMENT.)

COMPRESSOR FOR SALE.

THE Corporation of Dundee Gas Department Offer for Sale one complete "Waller" Twin Cylinder Tandem Horizontal GAS COMPRESSOR, 40,000 c.ft. per hr., 10 lbs./sq.in. press. Steam 100 lbs./sq.in. Compressor has been replaced by larger plant, is in excellent condition, and may be seen running before removal.

Also 225 22 in. × 16 in. Horizontal D FIRECLAY RETORT SECTIONS, consisting of 50 Necks 53 in. long, 5 parts 24 in. long, 170 parts 18 in. long.

The above may be inspected by appointment with, and Offers will be sent to, the undersigned.

JOHN WILSON, M.Inst.Gas E.,
Gas Engineer and Manager.

Gas-Works,
East Dock Street,
Dundee.

RAWMARSH URBAN DISTRICT COUNCIL.

(GAS AND WATER DEPARTMENT.)

THE Gas Committee of the above are prepared to receive TENDERS for the Supply and Delivery of One Second-Hand Steam Driven Four-Bladed EXHAUSTER SET of 20,000 to 30,000 Cu.Ft. per Hour capacity. The Exhauster to be fitted with Screw-Down Inlet and Outlet Disc Valves. Full guarantees must be given, and an undertaking given to cover any defects that may arise within a period of six months in connection with the said Exhauster.

Tenders to be enclosed in plain sealed envelopes, endorsed "Tender for Exhauster," to be addressed to A. H. Jackson, Esq., Clerk to the Council, Council Offices, Parkgate, Yorks., not later than Friday, 6th January, 1939.

J. POWDRILL,
Engineer and Manager.

Gas-Works,
Parkgate.

APPOINTMENTS VACANT.

COUNTY BOROUGH OF HALIFAX.

GAS ENGINEER AND MANAGER.

APPLICATIONS are invited for the Post of GAS ENGINEER and MANAGER.

Applicants must be fully qualified Gas Engineers, and have extensive Practical Experience in the Manufacture of Gas, Organization, Maintenance, and Administration of an up-to-date Gas Undertaking.

The Salary offered is £1,100 per Annum, and the Post will be subject to the provisions of the Local Government Superannuation Act, 1937.

The selected Candidate will be required to take up the duties of his office on the 1st May, 1939.

Applications must be made on the prescribed form, to be obtained from the undersigned, and delivered, accompanied by *copies* of Three recent Testimonials, not later than first post on Thursday, the 12th January, 1939, endorsed "Gas Engineer and Manager," and addressed to the Town Clerk, Town Hall, Halifax.

Canvassing, either directly or indirectly, will be a disqualification.

PERCY SAUNDERS,
Town Clerk.

Town Hall,
Halifax.
Dec. 15, 1938.

BOROUGH OF CHORLEY.
(GAS DEPARTMENT.)

APPOINTMENT OF LADY DEMONSTRATOR.

APPLICATIONS are invited for the above Position from Fully Qualified and Experienced DEMONSTRATORS between the ages of 21 and 35.

The Candidate selected will require to give periodic Cookery Demonstrations, make Home Service Visits, and attend the Gas Showrooms to Advise Consumers or Customers.

The appointment will be for a probationary period of six months in the first instance, and if the service of the person appointed has been satisfactory during that period the appointment will be made permanent and superannuable, subject however to termination by one month's notice. The successful applicant will be required to pass a Medical Examination.

The commencing Salary will be at the rate of £3 per week *plus* out of pocket expenses.

Applications, stating Age and giving details of Training, Qualifications, and Experience, together with *copies* of two recent Testimonials, must be received by the undersigned not later than Saturday, the 14th day of January, 1939.

GEORGE JACKSON,
Town Clerk.

Town Hall,
Chorley,
Dec. 23, 1938.

APPOINTMENTS VACANT.
(*Continued.*)

BOROUGH OF STAFFORD.
(GAS DEPARTMENT.)

DISTRIBUTION SUPERINTENDENT.

THE Stafford Corporation Gas Department requires the services of a Keen, Competent, and fully Qualified DISTRIBUTION SUPERINTENDENT.

A capable man with tact and enthusiasm for promoting gas sales will find a genial position with plenty of interesting work to do.

Candidates must be capable of undertaking the General Organisation of the Distribution Department, Supervising the Mainlaying and Fittings Staffs, interviewing and advising consumers on the installation and use of all gas burning appliances. Knowledge of central heating, also hot water plumbing work will be an advantage.

The Distribution Superintendent will be under the direct control of the Gas Engineer and Manager, and will be responsible to him for all duties.

Preference will be given to Candidates who have not attained the age of forty-two years, and who possess the necessary qualifications.

The Salary will be in accordance with Grade 1 of the Corporation's Grading Scheme, commencing £320 per Annum, increasing, subject to satisfactory service, by two annual increments of £20, to a maximum of £360. The first increment will become effective as from the 1st April, 1940.

The appointment will be subject to the provisions of the Local Government and Other Officers' Superannuation Act, 1922, and the successful Candidate will be required to pass the necessary Medical Examination.

Applications, giving Age, Qualifications, Experience, present employment, whether motorist and/or cyclist, married or single, accompanied by *copies* only of two recent Testimonials, should be addressed to Mr. T. H. Poulson, A.M.I.Mech.E., F.C.S., Gas Engineer and Manager, The Gas Works, Chell Road, Stafford, to arrive not later than the first post on Tuesday, January 17th, 1939.

Canvassing, directly or indirectly, will disqualify.

T. BROUGHTON NOWELL,
Town Clerk.

Borough Hall,
Stafford,
Dec. 22, 1938.

BOROUGH OF MORECAMBE AND HEYSHAM.
(GAS DEPARTMENT.)

APPOINTMENT OF SHOWROOM SALESMAN.

EXPERIENCED Salesman required to take charge of Gas Showrooms. Salary, £156 per Annum. Superannuated post.

Applications to be submitted on Form provided and obtainable from the Borough Gas Engineer, Moss Lane, Morecambe (by enclosing stamped addressed envelope), and to whom they must be returned endorsed "Salesman," not later than January 16th, 1939.

Canvassing is not permitted.

ROGER ROSE,
Town Clerk.

Morecambe and Heysham,
December, 1938.

APPOINTMENTS VACANT.
(*Continued.*)

THE KIDDERMINSTER GAS COMPANY.

WANTED—Works Foreman, Experience with Vertical Retorts and C.W.G. Plant essential. Commencing Salary £4 per week, with house and fuel allowance. Group Life Insurance and Pension Schemes in operation.

Applications, stating Age, Training, and Experience, together with *copies* of References, to be sent to the undersigned not later than the 3rd January, 1939.

PERCY DOUGALL,
Manager and Secretary.

Dec. 19, 1938.

EDUCATIONAL.

AUTHORITATIVE TRAINING FOR GAS ENGINEERS.

THE T.I.G.B., the Premier Organization for Engineering Training by Correspondence, will train you until successful for:

Certificates of The Institution of Gas Engineers, A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.E.E., C. & G., B.Sc. (Eng.) Lond. Univ., &c.

Write TO-DAY or FREE Copy of "The Engineer's Guide to Success," which alone gives the regulations governing admission to the above, and which contains the widest selection of engineering courses in the world—over 200 courses. Mention branch, post, or qualification that interests you.

THE TECHNOLOGICAL INSTITUTE OF GREAT BRITAIN,

148, TEMPLE BAR HOUSE, LONDON, E.C.4

(FOUNDED 1917. 20,000 SUCCESSES.)

COMPANY NOTICES

THE GAS LIGHT AND COKE COMPANY.

NOTICE is Hereby Given that the TRANSFER BOOKS of this Company, so far as they relate to CAPITAL STOCKS, WILL BE CLOSED at Four o'clock p.m. on Tuesday, the 10th day of January, 1939, and will be RE-OPENED immediately after the Ordinary General Meeting of the Company to be held on Friday, the 10th day of February, 1939.

Dividends payable on the 3¾% Redeemable Preference Stock, 1970, in respect of the Half-Year ending the 31st December, 1938, will be remitted by Warrant forwarded by post on the 14th January, 1939, to those Proprietors who were the Holders of such Capital Stock when the Transfer Books were closed or their authorised Agents.

Dividends payable on the Ordinary 4% Consolidated Preference and 3½% Maximum Stocks in respect of the Half-Year ending the 31st December, 1938, will be remitted by Warrant forwarded by post on the 28th February, 1939, to those Proprietors who were the Holders of such Capital Stocks when the Transfer Books were closed or their authorised Agents.

By order,
BRIAN WOOD,
Secretary.

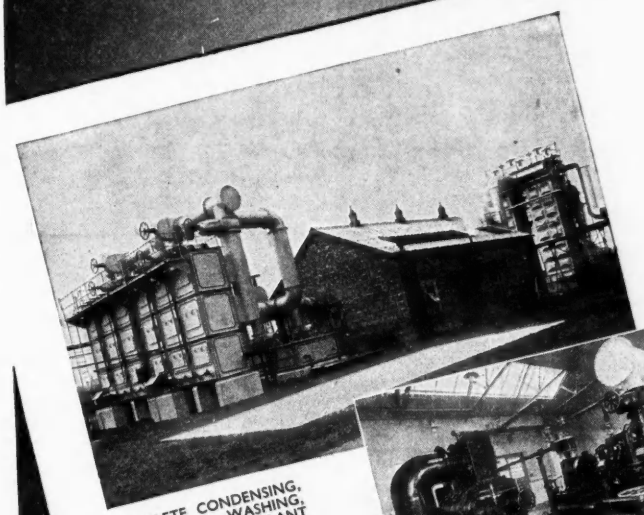
Chief Office,
Horseferry Road,
Westminster, S.W. 1,
Dec. 23, 1938.

For Contracts Open Advertisements see p. 990

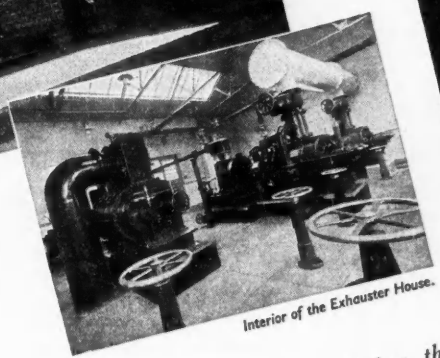
MODERN PLANT CONSTRUCTION by HOLMES

FOUNDED 1850

HUDDERSFIELD



COMPLETE CONDENSING, EXHAUSTING, WASHING, AND METERING PLANT BUILT FOR THE STRETFORD & DISTRICT GAS BOARD (James Carr, Esq., M.C., A.M.I.Mech.E., M.Inst.G.E.—Engineer, General Manager and Clerk).



Interior of the Exhauster House.

Many complete installations have been built during the history of the firm, including over 200 complete gasworks supplied to all parts of the world.

In recent years we have concentrated on the design and performance of By-Product Plant and our specialised knowledge is at the disposal of the Gas Industry.

OTHER OF OUR MANUFACTURES

Holmes-Connersville Exhausters, Blowers, Compressors, Pumps, etc.

Complete installations for recovery of Coal By-products; Purifiers, Gasholders, Cast Iron and Steel Tanks, etc.

Holmes-Elex Electrical Precipitators for removal of dust, tar, etc., from effluent gases.

Complete Sewage Handling Equipment, including Ejectors, Pumps, Valves, Pipe Lines, etc.

THE SOCIETY OF BRITISH GAS INDUSTRIES 1905

W. C. HOLMES & CO. LTD. HUDDERSFIELD

Telephone: Huddersfield 1573 *Telegrams*: "Holmes, Huddersfield"

LONDON OFFICE: 119 VICTORIA ST., WESTMINSTER, S.W.1. *'Phone*: Victoria 9971 *'Grams*: "Ignitor Sowest, London"

C152/G

CONTRACTS OPEN.

GLASGOW CORPORATION.
(GAS DEPARTMENT.)

CONTRACT No. 877/1/39.

PROVAN WORKS.

5 MILLION CUBIC FEET PER DAY CARBURETTED WATER GAS PLANT.

THE Corporation invite Tenders for the Supply, Delivery, and Erection at Provan Gas-Works, Glasgow, E. 1, of two Sections of Fully Automatic CARBURETTED WATER GAS PLANTS, each section to manufacture 2 Million Cubic Feet of 480 B.Th.U. Gas per Day.

Specification and Form of Tender may be obtained from the General Manager, Gas Department, 30, John Street, Glasgow, C 1, on payment of £10, which will be returned on receipt of a *bona-fide* priced Tender.

Tenders shall be deposited with the Town Clerk, City Chambers, Glasgow, C. 2, in the endorsed envelope supplied, not later than noon on Saturday, 21st January, 1939.

The lowest or any Offer may not be accepted.

J. L. MACKENZIE,
Town Clerk.

City Chambers,
Glasgow,
Dec. 20, 1938.

CONTRACTS OPEN.
(*Continued.*)

BOROUGH OF TIPTON.
(GAS DEPARTMENT.)

TENDERS are invited for :

(*a*) 1 Million Cubic Feet SPIRAL-GUIDED GASHOLDER in Steel Tank with Foundations.
(*b*) 2 Million Cubic Feet per Day STATIC WASHER.
(*c*) 2 Million Cubic Feet per Day P. & A. TAR EXTRACTOR.
(*d*) 80,000 Cubic Feet per Hour EXHAUSTING PLANT.

Bona-fide Contractors may obtain full particulars from the undersigned.

Tenders, in plain sealed envelopes, appropriately endorsed, but bearing no mark or name to indicate the sender, should be addressed to the Town Clerk, Municipal Buildings, Sedgley Road West, Tipton, Staffs., and arrive not later than first post Friday, 3rd February, 1939.

The Corporation do not bind themselves to accept the lowest or any Tender.

W. WILLIAMS,
Borough Gas Engineer and Manager.

Gas-Works,
Alexandra Road,
Tipton, Staffs.,
Dec. 21, 1938.

CONTRACTS OPEN
(*Continued.*)

BOROUGH OF MANSFIELD.
(GAS DEPARTMENT.)

THE Gas Committee are prepared to receive TENDERS for the Providing and Fixing of NEW LATTICE GIRDERS, also the Providing and Fixing of NEW ANGLE BARS to the existing Lattice Girders, together with execution of certain other Works of REPAIR to the Framework of GASHOLDERS, situate at their Mansfield Gas-Works, Lime Tree Place, Mansfield, Notts.

Copies of Contract Conditions, Specification, Form of Tender, and other particulars may be obtained on application to Mr. James Gibson, Gas Engineer and Manager, Lime Tree Place, Mansfield.

Tenders, which are to be enclosed in a plain sealed envelope, and endorsed "Tender for Gasholder Girders, &c.," must be delivered to the undersigned not later than the first post on Monday, the 9th January, 1939.

The Corporation do not bind themselves to accept the lowest or any Tender.

A. C. SHEPHERD,
Town Clerk.

Carr Bank,
Mansfield.

Telegrams: STRINGER BROTHERS WEST BROMWICH.

Telephone: WEST BROMWICH 0436/7.

REGISTERED

COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.
See our Advertisement Next Week.
REAVELL & CO. LTD. IPSWICH.

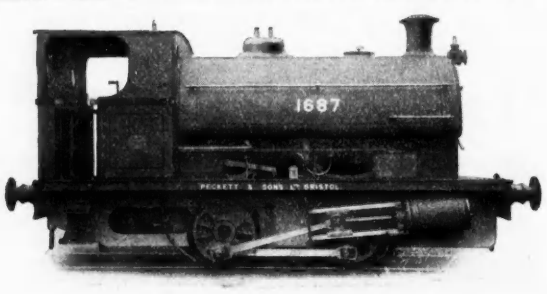
CASES FOR BINDING
QUARTERLY
VOLUMES OF THE "JOURNAL."
Walter King, Ltd., "Gas Journal" Offices, 11, Bolt Court, Fleet Street, London, E.C.4.

LOCOMOTIVES

LOCOMOTIVES of all Sizes and Gauges specially constructed for Main and Branch Lines, Contractors, Docks, Gas-Works, Collieries, Iron-Works, Brick and Cement Works, &c. Locomotives of various Sizes always in progress for early delivery.

Photographs, Specifications, and Prices on Application.

PECKETT & SONS, Atlas Locomotive Works, LTD. BRISTOL.
Telegraphic Address: "PECKETT BRISTOL."
London Representatives: FERGUSON & PALMER, 9, Victoria St., Westminster, S.W.1



ACTUAL SIZE

THE GAS SALESMAN'S POCKET BOOK 1939

Prices

Up to 11 copies	3/- per copy.	Post Free
12 to 23 copies	2/9 „ „	Carriage Extra
24 to 47 „	2/6 „ „	
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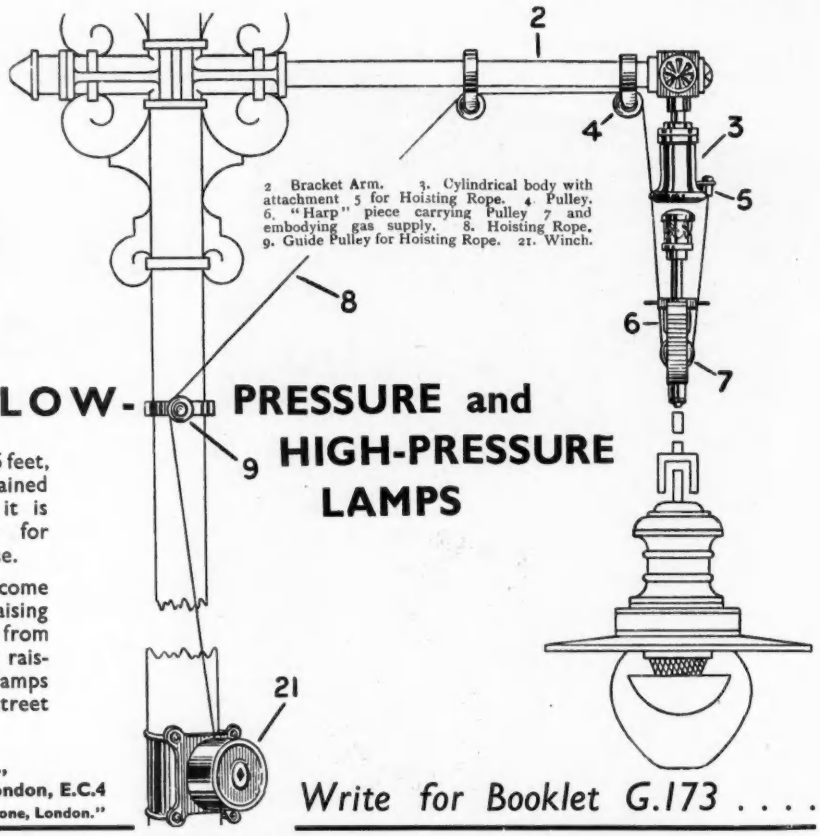

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